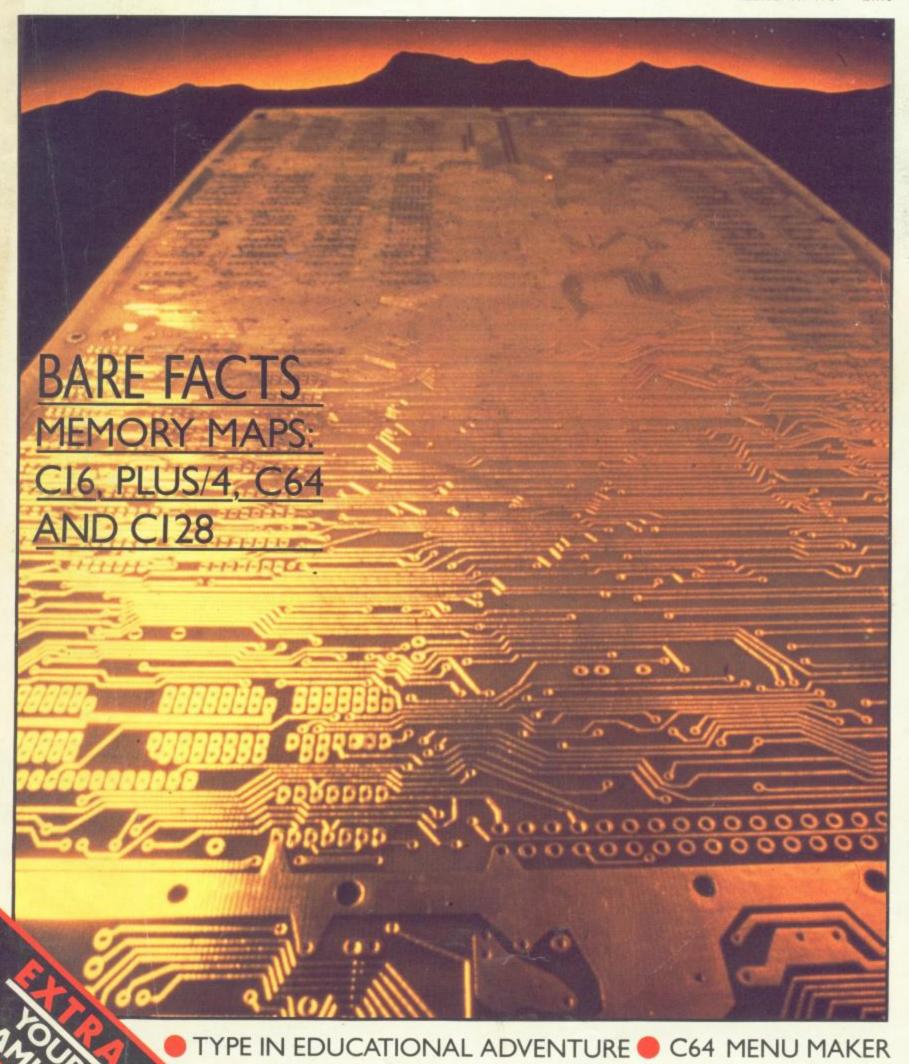
YOUR

COMMODORE

ARGUS SPECIALIST PUBLICATIONS

FEBRUARY 1987



PLUS/4 WORDPRO ADD-ON
C64 LABEL PRINTER



VOLUME 3 NUMBER 5

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18

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REGULARS

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Comms for Cnet users.



• Repton 3
Game of the month.



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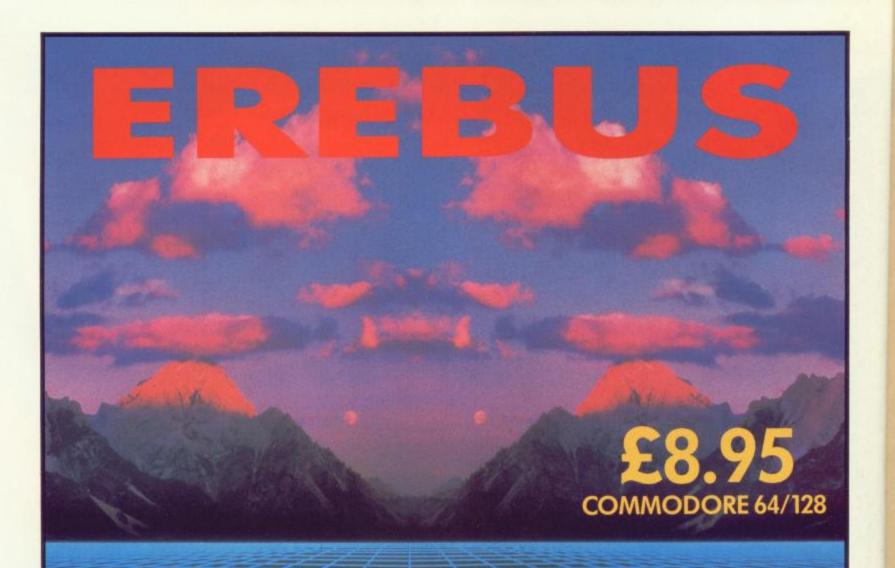
Educational adventuring for the young ones.



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Easy addressing with this utility.



This smooth scrolling
blast-'em game features
the very best in fast arcade
action by Steve Lee (author of the
Falcon Patrol series and Shogun) with
stunning graphics by Martin Wheeler (famous
for Spectrum Dan Dare and the original designer of
Sorcery). It is a multi-sectioned game with many varieties
of tough aliens to eliminate. You must fight through each wave in
your highly manoeuvrable spherical space fighter and save Earth from
the horrible fate of the noxious nerve gas being produced on planet Erebus.

Invest in some real action for your Commodore 64/128

Please send me a copy of EREBUS for the Commodore 64/128 (cassette only)

Name.

Address

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PLEASE DO NOT POST CASH.



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DATA STATEMENTS

Into the Arcades

Shoot 'em ups seem to be proliferating at the moment and are as popular as ever with the punters. Martech has brought out a zany game called *Cosmic Shock Absorber* based around the character of the same name – also defined as a fourth division hero. It will be available for the C64.

Another unlikely hero is Inspector Gadget of children's TV cartoon fame.

Inspector Gadget is determined to pursue the agents of MAD who are at the moment taking over the circus. MAD have planted bombs over the circus and you, as Inspector Gadget, have to find and defuse them. If a bomb explodes you lose a life. The title of the game is *Inspector Gadget and The Circus of Fear*. It will be on the streets very soon for the C64 on cassette for £9.95 and disk for £14.95 and is from Melbourne House.

Another unashamed shoot 'em up is Sigma 7 from Durrell software. Durrell describe the new game as a traditional shoot 'em up with todays demanding standard for graphics and sound. To increase your chances of success it can be played with an autofire joystick to avoid those cramps in your hand. Sigma 7 is also for the C64.

Cosmic Shock Absorber, new from Martech.

Ball Breaker is a new arcade game for CRL which has a familiar feel to it.

The player controls a bat which hurls a ball against a wall of bricks. The objective is to destroy the wall and then to proceed to the next levels to repeat the task. Different coloured bricks cause the ball to react differently – some bricks send the ball off at an angle, others cause it to change speed or even break in half. An added dimension is that demolishing some walls releases monsters who then have to be killed.

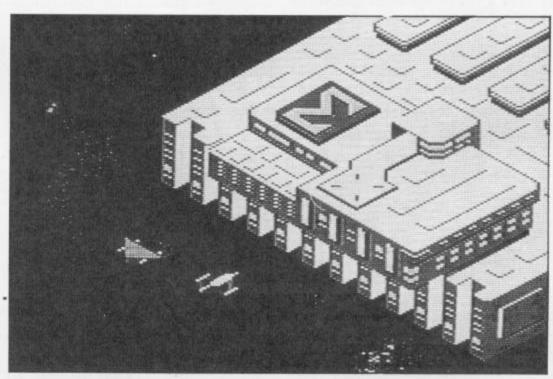
It will be available for the

Commodore 64 on cassette at £7.95 and disk at £14.95.

Touchline

Martech: Martech House, Bay Terrace, Pevensey Bay, East Sussex. BN24 6EE. Tel: 0323 766616.

Melbourne House: 60 High Street, Hampton Wick, Kingston-upon-Thames KT1 4DB. Tel: 01 943 3911. Durell: Castle Lodge, Castle Green, Taunton TA1 4AB. Tel: 0823 54489. CRL: 9 Kings Yard, Carpenter's Road, London E15 2HD. Tel: 01 533 2918.



If it moves shoot it - Sigma 7

The Commodore Show

The 9th Official Commodore Show was held at the Novotel, Hammersmith, London in November. We were happy to welcome our readers to our stand and would like to say thanks for everyone's comments (both good and bad, although we were pleased to note that most of you are happy with the direction that the magazine is taking).

Ben Wellbay brings you the punter's point of view.

Visitor's View

On entering the building on a very cold and windy day, we were not really surprised to see scantily clad females ready to thrust the official Show Guide in our hands. What we were surprised about was that the Show Guide was free and so we ventured forth with raised hopes for a reasonably good show.

Alas this was not to be. We were immediately aware of the distinct lack of exhibitors, and the few modest stands that were occupied, seemed to be very similar both in content and theme. One really wonders why, when Christmas was so close and the show not clashing in any way with similar functions, so many of the larger Commodore dealing enterprises were noticeably absent. Is Commodore really becoming the dinosaur of the computer industry?

However, grumbles aside, mention must be made of the exhibitors who were present. First impressions of these

DATA STATEMENTS

were that most stands were offering generally outdated software or printer accessories at very low prices. The noisiest stand, meant in the nicest possible way, must have been Colleen's bit of floor. Colleen was promoting its Music Creator - an excellent package which contains a full tutorial on the rudiments of music together with the actual creator disk. Simple to use, the beauty of this program is that any music or sound effects so created can be saved in compiled form and used as an individual module within your own programs. A beautiful rendition of Vangelis was being played through the stereo system, and a free copy of Colleen's Quilled adventure game, Mystery Voyage, was given with every purchase of the Music Creator.

Trilogic was in evidence at the foot of the stairs promoting *The Expert* Cartridge and the new anti-freeze ESM Module together with other add-ons. When we went upstairs to the larger area, we located Evesham Micros, demonstrating the excellent *Dolphin DOS* a very nifty chip which speeds up disk access so much that it's frightening! It could be seen in action within 1541, minus its lid, and it really was most impressive.

Moving to the Supersoft stand, we could hear the strains of music belting out of the everso expensive *Microvox Digital Sound Editor*. We also noticed a few young budding Cozy Powells practising their art on the Rhythm King a neat little package available on cartridge and disk/tape.

Even though there were several stands showing off the almost unlimited capabilities of the glorious Amiga, it was well n igh impossible to get close enough to one in order to sample the remarkable demo software being exhibited. It is disheartening to realise that this machine is still beyond

the reach of most buffs even with the price reduction, but then when you see it in action, perhaps it does justify the price tag. attac

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Overall the show was quite disappointing although those exhibitors who did turn up tried in almost every case to cater for everyone's needs and were in general very helpful. Bargains were to be had for the more discerning punters, prices varied considerably from stand to stand (for instance the tape version of Crystal Castles was on sale for £9.95 and £5).

I personally would hope for a more responsive attitude from the larger software houses in the near future to make greater effort in attending these shows, and would sincerely trust that the 10th Official Show will be more useful to all parties concerned, exhibitors and customers alike.

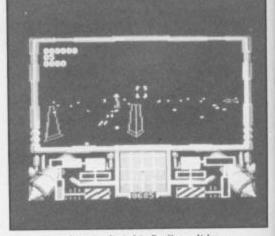
Space Age

Into the realms beyond the atmosphere for a look at another batch of zappy games.

CRL's latest space action game is called *Death of Glory*. The player is the pilot of a Space Dozer, a small craft which clears up space, keeping it safe to travel in. Whilst out on route an invading fleet is discovered. There is no time to raise the alarm, the only action possible is to take them on alone. The only way to attack is ram the ships. The cassette version for the C64 is £8.95 and the disk version is £14.95.

Starglider is a new science fiction game from Firebird. It's an air-to-air air-to-groun flight simulation set on the planet Novenia.

Your task is to destroy the flagship, Starglider, of the marauding Egron fleet. Low level flying, defence and



Great graphics in Rainbird's Starglider.

Non-Physical Exercise



Brian Clough takes on the software charts.

Brian Clough's Football Fortunes from CDS is a computer game with a difference because it's a board game. It combines the speed and flexibility of a computer with the social aspects of other best-selling board games. Plus the gace that it was written with plenty of advice from Brian Clough himself.

Two of five players take on the roles of team managers. Each one must steer his team successfully through the season and use his skill to make his team stronger. Some of the opposing teams are managed by fellow players, the rest of the 10 team league is taken by the computer.

The game package consists of a computer cassette or disk, a playing board, five coloured counters, a pack of football player cards, immunity cards and a heap of money. Release date is 14 January and the C64 version

will cost £14.95 cassette and £17.95 disk.

Now for the inevitable martial arts release.

Fighting Warrior is from Melbourne House and is now available in C16 format. As Fighting Warrior, champion of Egypt, you must use all your combat skills to rescue the beautiful princess. Armed with just a word you are faced with ordeals and challenges from various creatures which cross your path. It's in the shops now and is £5.95.

Touchline

CDS: CDS House, Becket Road, Doncaster DN2 4AD. Tel: 0302 21134. Melbourne House: 60 High Street, Hampton Wick, Kingston-upon-Thames, Surrey, KT1 4DB. Tel: 01 943 3011.

DATASTATEMENTS

attach manoeuvres and survival techniques are all part of the action. The C64 version is £14.95 on cassette and £17.95 on disk.

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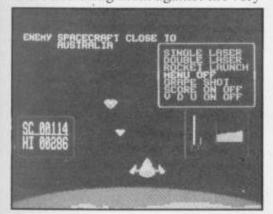
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In Mind Games' newest release, you are once more the lone hero attempting to safeguard the existence of the human race. Mission Omega is an action strategy game in which you must intercept a radioactive alien invader which is rapidly closing in on the planet earth. Because of the lethal radioactivity of the invader you must us robots to carry out the shutdown of the reactor by remote control. These are specially designed for the task however their movement is programmed by you. Available now, Mission Omega is for the C64 and is on cassette for £9.95.

Quicksilva's latest game *Defcom*, looks at the possibility of aliens taking over the USA's defence satellites in the future and using them against the very



Defend the USA with Defcom - new from O.S.

countries which they were meant to protect. The only way in which to regain control of the satellites is for one man to take them all on in his Eagle Class E751 fighter with the recently developed single beam – High Intensity – Anti-Aircraft weapon. The mission, nicknamed Reagan's Run, is taked on by Nick Diamond, a leading space acrobat.

Defcom is available now for the C64 at £8.95.

Erebus from Virgin Games is also a space scenario blasting game. Erebus, a planet which has been used to convert earth's waste materials into useful gases and chemicals has now been utilised by the aliens from the neighbouring planet of Hadebus to produce a noxios nerve gas to obliterate the earth's population. The refinery is split into different levels of circular sections, interlinked by dimension ducts. You must completely orbit each section, eliminating as many aliens as

possible and then gain access to the dimension duct. The game is £8.95 and is for the C64.

Touchline

CRL: 9 King's Yard, Carpenter's Road, London E15 2HD. Tel: 01 533 2918. Rainbird: 74 New Oxford Street, London WC1A 1PS. Tel: 01 240 8838. Mind Games, Quicksilva: Victory House, Leicester Place, London WC2H 7NB. Tel: 01 439 0666.

Virgin Games: 2-4 Vernon Yard, Portobello Road, London W11 2DX. Tel: 01 727 8070.

War Gaming

PSS, the software house, which specialises in war games has added two new releases to its extensive range.

The Annals of Rome is a vast strategy game based on the rise and fall of the Roman empire. The game starts in the year 273 BC, when the Romans had just gained control of Italy. Your role is that of the ruling power in the Roman senate deploying commanders and troops in successive foreign and civil wars.

At any time you may be faced by up to 13 hostile enemies each fighting to extend its own sphere of influence. Your enemies are as diverse as the barbaric gauls and the sophisticated Carthaginians.

At your disposal you have the incomparable Roman Citizen Legionaires and 21 individual officers of a wide range of ability and loyalty.

The Annals of Rome is a phased game and is controlled via the keyboard. It will be available for the C64 in the spring.

From American Action is '43, The Year After. One Year after the Battle for Midway, the war is still raging in the Pacific. The Japanese Kamikaze pilots are at their worst. Commander R.B. Wildfox selects you, Bertram M. Digdale, the former elite pilot, to patrol the most dangerous part of the

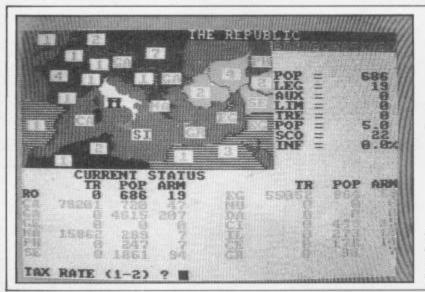
Pacific Ocean. Features include, smooth fast graphics, status and map windows, landbases as well as carriers and 999 levels and over six hours of background scenarios. Out now for the C64 on cassette on £9.95 and disk at £14.95.

Into the realms of fantasy with a new strategy, fast action game from Rainbird. *Tracker* is a tactical battle against an artificially intelligent enemy combining a high degree of strategy in a fast action 3D game.

The top half of the screen in Tracker shows an enlarged map of the start area and the bottom half displays a long range map. This shows the positions of the red Cycloids, the yellow communications links and communications centres. Plus the sectors and positions of you eight skimmers. Your ultimate target is the large enemy headquarters. It's now a vailable for the C64 on cassette (£14.95) and disk (17.95).

Touchline

PSS: 452 Stoney Stanton Road, Coventry CV6 5DG. Tel: 0203 667556. American Action: Box 10090, S-200 43, Malmo, Sweden. Tel: *36 4023 25 20. Rainbird: 74 New Oxford Street, London WC1A 1PS. Tel: 01 240 8838.



Watch the ups & downs of the Roman Empire in the Annals of Rome.

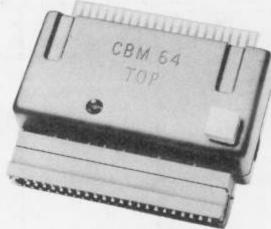
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Products and Accessories

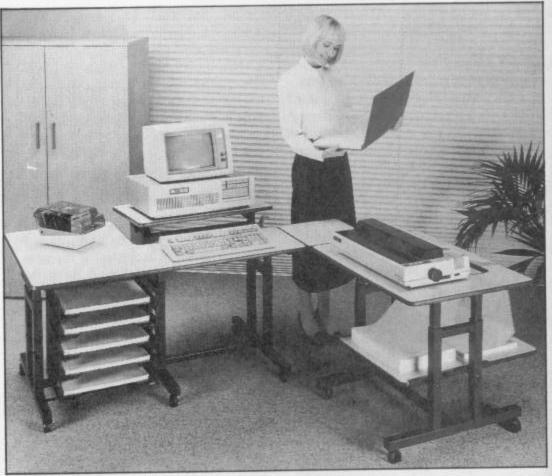
In the winter months that fiend, that most hated enemy of computer owners, rears its ugly head once more. Static Electricity. The cause of thousands of pounds worth of damage to computers both in the home and in the office. Perhaps the Static Buster could solve your problems. Produced by Integrity Solutions, this gadget may be able to save you money and frustration. Integriry Solutions press statement claims: "The simple act of walking over a carpet can generate a frightening 35,000 volts. Transmit that from your fingertip into a personal computer and the results can be devastating." The Static Buster, acting like a sponge, diverts electricity from the three vital elements of computer operation, from the three vital elements of computer operation, the keyboard, screen and operator. The price for this wonderful innovation, a mere £49.95.

One of the most popular cartridges of last year must have been *The Expert*, from Trilogic. A new update is now available to make the cartridge more efficient. The compact ESM *ESM*





Module is fitted with LED, push button and connector. It fits between the cartridge port and The Expert



A Posh computer furniture from Twinlock.

New addition for the expert cartridge.

cartridge and has no effect on action and can be left connected and otherwise ignored. It's available by mail order and costs £7.95 including postage and packing.

And if you need somewhere to put all your equipment, then maybe you'll want to invest in light oak laminate computer furniture from Twinlock. The surfaces of the furniture are wipe clean and heat resistant and the bases are constructed from strong tubular steel fitted with castors at the rear for mobility and anti-skid front legs and stability in operation.

Touchline

Integrity Solutions: 504 Manchester Road, Sudden, Rochdale OL11 3HE. Tel: 0706 34535.

Trologic: 329 Tong Street, Bradford BD4 9QY, Tel: 0274 684289.

Twinlock: 36 Croydon Road, Beckenham, Kent BR3 4BH. Tel: 01 650 4818.

Pocket Money Prices

Finally, a quick look at a few budget games to see you through a lean period.

Sparklers have released five C16 games at £1.99 each. Java Jim is for the C64 and is about an archaeologist, Idaho Jim, in pursuit of hidden treasures from the past inside an active volcano.

Slurpy is about a greedy creature from the planet Gluton who explodes if he has to much nosh. Also for the C64. Orc Attack, another C64 game, is the classic story of castle seige by the demon orcs who terrorise the land, and River Rescue is a fast chase down a river dodging rocks and mines to reach

a safe haven.

Bug Byte has launched six Commodore Titles. Deathwake, Falcon patrol II, Strangeloop and Alien for the C64 and Zagan Warrior and Aardvark for the C16. All are priced at £2.99.

Touchline

Sparklers: Unit B11, Armstrong Mall, Southwood Summit Centre, Southwood, Farnborough, Hants ONP. Tel: 0252 522200.

Bug Byte: Victory House, Leicester Place, London WC2H 7NB. Tel: 01 439 0666.



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*Please see opposite for Superscript and combination pack prices.

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Desktop Utility Software	£64.95
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By far the best such package for the CBM64 - the hardware is excellent, the software technically stunning - PCW

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This module, used via TV or external amplifier, uses FM chips which are significantly more powerful than the Commodore's SID chip. The eight available channels produce extremely realistic sounds, allowing complex chords and melody lines. Driven by pop-down menus, the powerful sound facilities of the expander create a viable composing tool.

5 OCTAVE KEYBOARD

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SOUND STUDIO

This powerful synthesis software contains a stored library of REE P 60 sounds and the ability to create your own sounds via screen menus. It also contains a multi-track recording facility with powerful 6-track midi sequencer.

This package represents a breakthrough in computercontrolled synthesis and compares in quality and specification with systems costing many times the price.

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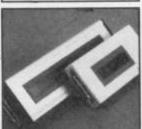


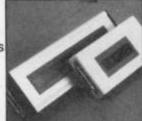


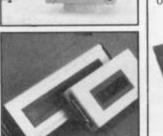


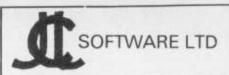












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Very Fast File Copier for selective file copying at HIGH speed. Now handles files up to **248 blocks** long. Improved DOS commands (DOS 5.1) makes for easy use of the disc drive, eg. \$(RETURN) will LOAD and display a directory without over-writing BASIC SHIFT RUNISTOP will LOAD "0+" B.L. "0.+",8.1 etc. Very, very useful.

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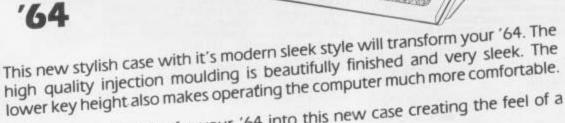
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TAPE TO TAPE

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w the FIFTH generation of the countries leading disc back-up/utility package is available. This latest version includes many more "PARAMETERS" to handle the latest highly protected discs. This includes the latest American and English. software. Be warned if you want to back up software by Ocean, Grenlin, Hewson, Domark and even U.S. Gold, whose protection schemes are NOT always the same as the American versions, then you MUST have "D.D.". At press date, we are sure NO other advertised product will handle all these, be it American or German.

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EVESHAM & MINUTE NIBBLER" still very powerful and has been improved. Copies a few that the three minute version won't.

ny other useful utilities are included on the disc, including SELECTIVE MENU MAKER, FAST FORMAT, FAST FILE COPY, NOVATRANS, DISK ORDERLY, DISCMON+, UNSCRATCH, ETC., ETC.

The whole package is menu driven and has its own fast boot system built in for your convenience. Pays for itself the first day you

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STOP PRESS!!

Many software houses are now using "Anti-Freeze" in their software. This renders ordi-nary back-up contridues usalous. We are now Freeze" in their software. This renders ordinary back-up cartridges useless. We are now shipping "Freeze Frame Mk. 3B" which will other competitive devices will NOT. Most new software will be using this so don't forget if you want results you must buy "Freeze Frame". Owners of Mk. 3 wanting Mk. 3B can upgrade

ALIGNMENT

PROBLEMS?

1541 PHYSICAL EXAM

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This package incorporates new drive stops for **two 1541s** that will **end for good** the dreaded "woodpecker". The fitting process is very easy and a test program is provided to check the fitment. Helps prevent future alignment problems and makes your drive purr with

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Petspeed 128

Writing programs in Basic is far easier than using machine code but the programs are also a lot slower. This new offering for the C128 will turn your Basic programs into machine code for extra speed.

Vo matter what type of program you want to write it is far easier to tackle it in Basic than by using machine code. Writing in Basic on the C128 is even easier than its predecessor the C64 since it has a plethora of built in sound and graphics commands. However, there's one big problem, a Basic program is excrutiatingly slow. There's nothing worse than writing your latest space shoot-em up only to find that your hyper-galactic star cruiser takes no less than two minutes to go from one side of the screen to the other.

Petspeed 128 is a Basic compiler program. A compiler takes a Basic program and turns it into a machine code program increasing the speed of operation dramatically. The manufacturers of this package claim that it is possible to increase speed of operation by up to 40 times.

Loading the program into the computer is a total bind. The disk isn't protected but there is a colour chart that you are asked for three colours from as a form of protection. I find this type of protection annoying and difficult to use. A friend who is colour blind only managed to get the program up and running once. Personally I would rather have the disk protected and be able to LOAD the program with ease.

Compatibility

Obviously there must be some incompatibility between the compiler and the standard C128 Basic. Fortunately these are all quite minor and should cause no great headaches. Examples of the type of instruction that have to be altered are:

Arrays must be dimensioned at the time of compilation. You can not therefore have a command such as:

10 INPUT A: DIM N(A)

instead you would have to decide what A should be before you compile the program and enter it as

10 DIM N(100)

Basic instructions that use a line number as an argument, eg. RESTORE, require a constant after them rather than an expression. For example RESTORE N+1 would not be allowed.

RESUME NEXT is not supported.

As you can see none of the above should cause any problems and any occurrences of the above can probably be changed very easily.

Added Extras

A number of extra commands have been added to the C128's Basic in order to make use of the compiler more efficiently, the following are examples of some of the new commands.

- 1) User defined string and mixed functions are available. For example: DEF FN A (X\$) is now allowed.
- You can have integer FOR NEXT loops which will give an increase in speed.
- 3) The !LN name will make all the letters of a variable name significant. Usually the C128 only takes not of the first two.

And there are many others including commands to disable and enable the STOP key, the & command which will allow input to be taken from a disk file. The % instruction allows the use of other companies' Basic extensions.

Other Benefits

As well as speed there are a number of other benefits to using a compiler over standard Basic. For a start the !LN command allows you to use strings that use the same letters to start with, something that you can't normally do. This means that your programs can be made more readable since you can use variable names that actually mean some thing such as SCORE.

Sorting Out Errors

When a Petspeed program is RUN and it comes across an error you will be given a report just like a Basic program. However, there's one small problem. Petspeed programs don't have lie numbers only addresses so how are you going to find out where your problem is?

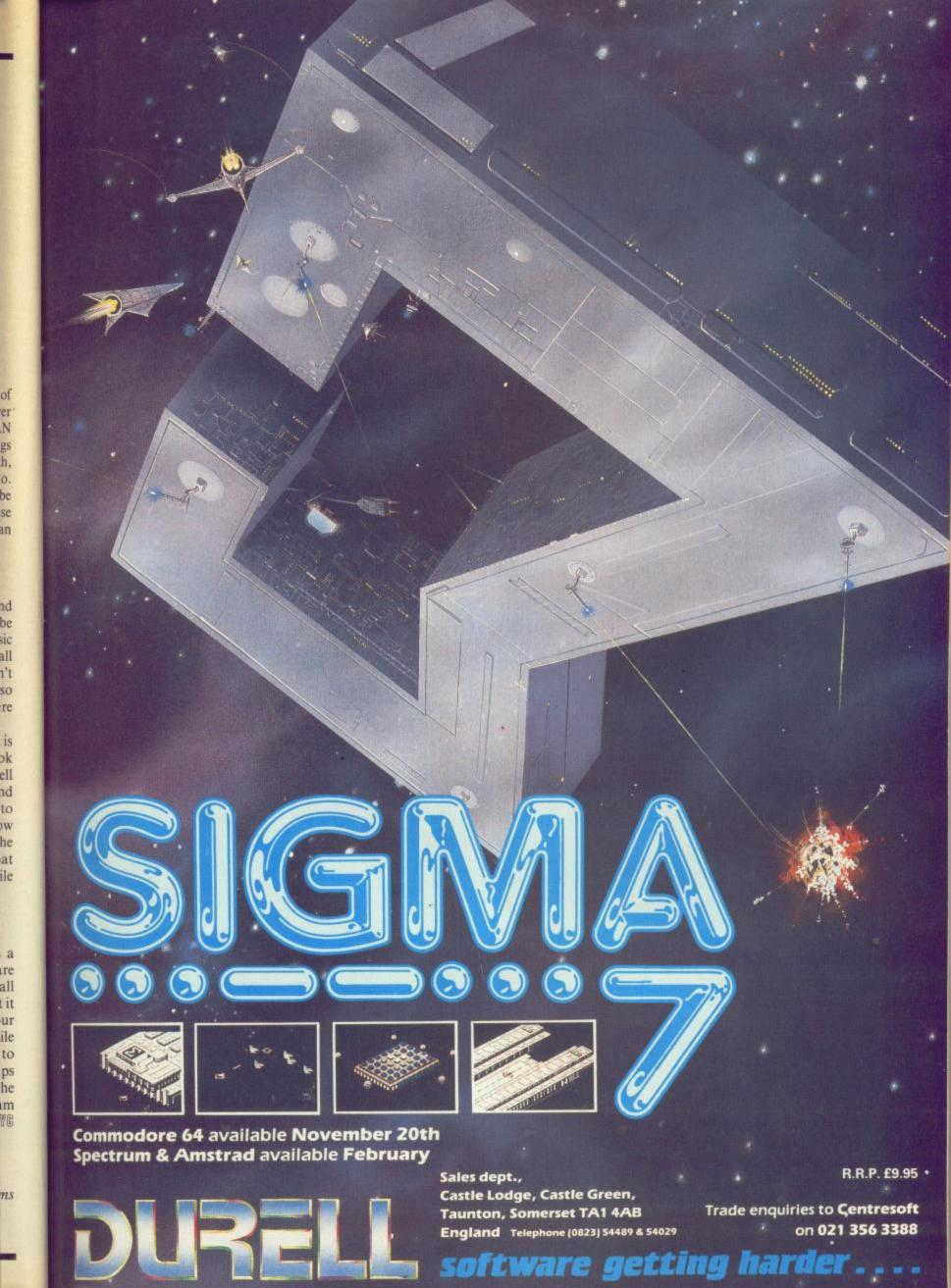
A program called ERRORS that is suplied on the program disk will look through a special *Petspeed* file and tell you in what line the error occurred and try to give you an indication as to where in this line the error was. Now all that you need to do is LOAD the original Basic program, find out what caused the error, correct it and compile the program again.

Verdict

Petspeed 128 is a program that is a must in any C128 owners software collection. OK so you may write all your programs in code but wouldn't it be quicker to write some of your programs in Basic and the compile them? If you are fairly new to computers and are just getting to grips with Basic then Petspeed gives you the opportunity to speed your program up.

Touchline

Name: Petspeed 128. Supplier: Systems Software (Oxford) Ltd. Price:



C T N B F S B

Club 128

News from Compunet of new deals and new directions to keep you interested.

By Neil Day

Interesting things are afoot at Compunet. Following a huge increase in the number of subscribers after the special free modem offer, the service is now on the point of a major expansion. A new mainframe, dedicated to the network, is proposed which will easily accommodate the increased numbers of users. The upside is the promised improvement in speed and service. The down side is the wait! Because the software running the system has to be largely rewritten, the new dedicated system won't be available until the projected date of mid 1987.

Recent deals offered by Compunet suggest that the network might be going in some interesting new directions. One offer to Gold subscribers is 10,000 page/days for an additional payment of £10 above the quarterly charge of £15. User-selectable names and banners are now available. Another new service will provide closed user groups which would allow a number of users exclusive access to an otherwise protected area. Part of the present ICPUG area operates in this way.

It is interesting to speculate about who such services could be directed at: surely not spotty, juvenile, whizzkid machine code programmers of all ages who hog the family telephone while they update the latest diagonally scrolling 15 mega-zap demo with 27 channel sound. I'd speculate that large-scale information providers are



being courted with these offers. Perhaps Compunet has in mind something like the travel agents area on Prestel, or link up between schools or businesses.

The fact that a machine upgrade is proposed at the same time as services are being extended in this way may lend some weight to these speculations. Gran poss muli

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One development projected for the short term is the establishment of an ISTEL node in Eire. This may well be set up by the time you read this. It is rumoured that the charge will be slightly higher than the node in Britain.

Again it is interesting to speculate about implications and future directions. The International Packet Switching Service allows me to log into a computer in Melbourne. Australia, for £6 per hour plus a small charger per byte of data transmitted. Electronic mail can be used to transfer files if large amounts of information are to be exchanged. This is cheaper still, and takes about 20 minutes. There is no apparent technical reason why, if this will work from UK mainframes to Australia, it shouldn't work in the opposite direction allowing the dulcet dipthongs of 14 million Aussies to reverberate around Compunet! Now there is an idea: given what Peter Ustinov can do with the Gibraltar





Grand Prix, think of the comic possibilities of a multinational and multi-lingual Compunet Partyline Session!

Leaving futurology and returning to the Compunet of the here and now: There has been a lot of activity in the Network recently. GOTO PSION will take you to a very interesting new area for owners of the Psion Organiser, the pocket computer with inbuilt database software that seems to weave its insidious way so far into the owners' lifestyles that its just not worth their getting out of bed if the thing breaks down! As you'll gather, I don't have one myself, but seeing the information, programs and applications that FD1 has uploaded in the PSION area shows just how versatile this little beasty is.

There are several frames about interfacing the Psion organizer to the C64 using a serial interface. You often hear about this sort of thing being possible, but FD1 describes exactly

how he did it. Files prepared with Easyscript or any other wordprocessor can be transferred from the C64 into the Organizer, overcoming one of the main objections to pocket size computers: the sub-finger sized keyboards that make them infuriating to use.

As well as this general information, FD1 had a directory of Procedures that includes a number of file handling routines for the Psion Organizer, a program to list the diary stored in it, and, a couple of other programs to calculate petrol consumption and a timer and cost calculator for phone calls. Many thanks to FD1 who has made all this information available for CNetters free of charge.

Among the many hundreds of additional items do check JMS4's GOOD GOTOS guide: you'll find it a directory on the first page if you GOTO GOTOS. These frames, now free of charge, provide a compre-

hensive list of what is available on Compunet, and classify some programs. The list of Utilities in Good Gotos 2 is particularly impressive. The large number of votes shows that users are hoping JMS4 is able to maintain this excellent service. JMS4 asks that you courier him when you upload anything of interest.

GOTO VISION and get a really unobstructed view of the previously hidden tonsorial interests of la famille Wino. Be warned however that these uploads come within a whisker of being risque and may make some readers bristle.

If any of the uploads mentioned here is not available at the location given, please check the Club 128 update frames you'll find after GOTO YRCBM. If you find or upload anything that is vaguely non-recreational and likely to be of interest to Club 128 readers, please courier me on NAD2.

COMMODORE plus-4/C16

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PHOTON LOAD — FAST LOAD AND SAVE

Have you ever wasted time waiting for your programs to load or save? This excellent program will make a real difference to your computer. PHOTON LOAD, the new cassette operating system loads in seconds and allows you to load and save your programs at about TEN times the speed of a normal load or save. Two additional Basic commands make this extremely easy to use. Why spend money on a disc drive when you can load and save this fast. Features such as stiped screen loading and an audio warning when loading is complete assure you loading/saving is going to plan (unlike the Commodore system) — A well designed Cassette loading and saving system — once you hae one you won't want to be without one. Great value £7.95.

SUPER SPRITE

This extremely clever utility allows you to use 8 sprites simultaneously over a low-resolution screen. With this program you can now imitate the sprites found on the Commodore 64 Each sprite is composed of 16 × 16 pixels for high definition. Sprites can be independently moved in any direction with VERY SMOOTH scrolling. Sprites may take or any colour and travel at any speed. Sprite priorities and collision detection are provided. Despite adding all these complex features to your computer it is very easy to use. We provide extra Basic commands to make it very easy to use sprites with your programs. On top of all this we provide you with FREE demo programs and a FREE sprite designer. What more do you need to bring real power to your games on your C16/PLUS 4. This entire package is a must for games programmes.

ELECTRIK PENCIL!!!

A truely excellent high resolution art program. Magnificent masterpieces can be quickly drawn using the powerful facilities provided by this package. The program is entirely written in high speed machine code and includes Variable pencil size, Variable drawing speed, Easy select cursor menu, pixel draw/plot, freehand, lines, circles, flood, characters/letters plotted on high-res screen at any position, 121 colours all usable simultaneously, hard copy to printer, load and save of pictures to cassette or disc, joystick or keyboard operation. Many other facilities too numerous to mention. Complete with instructions.

THE MIRROR - TAPE BACK UP

Superb tape to tape back up copier catering for the majority of PLUS-4/C16 games. Backs up both standard and FAST loading software. All major loading systems catered for. Very large menu of both general back up routines and popular games. Basic, machine code and protected games all easily handled. NO extra hardware and NO second cassette. Very popular utility.

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THE WAND - TAPE TO DISC

Make full use of your disc drive by effortlessly converting your games/software to disc. Convenient and fast loading from disc. Handles all major loading systems with a very large menu of general back up routines and games. We have had many letters telling us how much people appreciate this utility Don't be left out — buy one! Every disc user should have one.

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MERLIN ASSEMBLER

100 o/o machine code assembler for the plus-4/C16. Very fast assembly of source code. Easy entry/editing of code via the full screen editor. Full error messages pinpointing the errors. Full load/save and printer facilities. Intelligent assembly. Variable names, labels, hex/decimal, text and data statements, remarks, post indexing of variables etc. Many other facilities too numerous to mention. Highly recommended — A truely superb assembler. Comes with instruction booklet and FREE booklet of machine code routines.

Cassette £8.95

BLACK CAT - CASSETTE CONVERTER

Have you ever wanted to use your PLUS-4 Wordprocessor, Spreadsheet, Business graphics etc. With a cassette unit? This program allows you to save your files to cassette rather than disc (as forced to by Commodore). Quick, convenient, easy to use.

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COMMODORE 64

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Turbo Menu Maker

In a new series we bring you a selection of short utilities which should be invaluable for anyone wishing to handle large amounts of data.

By Les Allan

Inyone wishing to store and process a lot of data is bound to come across numerous problems in an attempt to sort it into an accessible and economic form. This short series of utility programs is designed to place facilities at your disposal which will do just that. The first item is a Turbo Menu Maker.

Turbo Menu Maker

This routine reads the current directory from disk and rearranges it such that the MENU file is saved as the first file and a straight line as the second. If the total number of files read is less than 64 then the process can be continued. This is because sufficient room (eight blocks) must be kept clear for the MENU program in the directory.

A directory sort routine is selectable between either an alphabetical or manual sort. The

alphabetical sort ranks the directory in alphabetical sequence prior to rewriting the directory. Whereas the manual sort provides, in addition to the user being to determine the sequence, the facility to insert a separating line/lines in the sorted directory. The type of separating line used is defined by the user from a keyboard character - if RETURN is pressed the default is a straight line. It should be realised that the limitation of 64 entries also applies to the addition of separating lines.

. Choosing Files

The choice for the MENU saved files is then made by selecting 'Y' of 'N' to each of the directory files. The count of the total number of selected files is indicated adjacent to the current files and providing the selection does not exceed 64 in total then the process can be continued.

4A 19 PRINTSPC(B)CHR\$(18)"CS-,SP

CSJBY LES ALLANCSPCS.S-3 21 PRINTSPC(B)CHR\$(18)"CS-,SP

20 PRINISPC(B)CHR\$(18)"CS-, SP

22 PRINTSPC(B)CHRS(18)"[SJ, 5*

The directory plus the MENU straight line is then saved to disk.

The MENU program is then read from memory in 254 byte sections and written to the directory from the next vacant sector in the sequence.

The program, once loaded. displays only those filenames that were chosen. These are selected with the cursor keys and entered by RETURN. The program then loads at a turbo rate of approximately five times with a flashing screen to indicate that a successful load is taking place.

The program as listed must be typed in exactly as written and saved prior to running. Error trap routines are included to ensure that the data as read is correct. The program when run stores the relevant code at a temporary address of \$8000 and when prompted relocates the working program to Basic (\$0801) and saves to disk the program TURBO MENU V3.0.

PROGRAM: TURBO MENU MAKER

Please read LISTINGS before entering this program

- 10 M1-32768: M2-39248: CH-0
- 11 PRINTCHRS(144)CHRS(147)
- 12 POKES2, 120: POKESS, 120: POKE 53280,15:PDKE53281,12
- 14 PRINTSPC(8)CHR\$(18)"[SU,S*
- 15 PRINTSPC(8)CHR\$(18)"CS-,SP CRP,S-]
 15 PRINTSPC(B)CHRS(18)"CS-,SP
- CHIDATA STATEMENTESPC3,S-J 17 PRINTSPC(8)CHR\$(18)"CS-,SP
- - 18 PRINTSPC(8)CHR\$(18)"[S-] TO MEMORY ROUTINE [S-]
- 22.SK3 23 PRINT: PRINTCHPS(155) 24 PRINT" THIS ROUTINE READS
- THE DATA STATEMENT, 25 PRINT

C22.5-1

- 26 PRINT" CONVERTS FROM HEX TO BINARY AND POKES" 27 PRINT

- 28 PRINT" CODE BACK TO THE AREA OF MEMORY FROM"
- 29 PRINT
- 30 PRINT" WHICH IT WAS PRE VIOUSLY GENERATED." 31 PRINT: PRINT
- 32 READCODES
- 33 LB-ASC(RIGHTS(CODES, 100-48 : IFLE>STHENLE=LE-7
- 34 HB-ASC(LEFTS(CODES,1))-48: IFHB>STHENHB=HB-7
- 95 PRINTSPC(5) CHR\$(5) "READING MEMORY BLOCK ...": M1: PRINTCH
- 36 POXEM1, HB*16+LB: M1=M1+1: CH

Г		-CH+HB+LB: IFM1 <m2then32< td=""><td>WHI.</td><td>02,55,03,0F,12,0E,03,14,54</td><td>04</td><td>121 DATA 62,70,00,68,F5,F7</td></m2then32<>	WHI.	02,55,03,0F,12,0E,03,14,54	04	121 DATA 62,70,00,68,F5,F7
	EB	37 IFCH=90466THEN39	E4	80 DATA 46,4F,4D,52,46,DF,64, 66,66,07,04,16,0E,07,04,03	БА	,64,1F,64,E9,0D,62,F5,F7,64 122 DATA 08,64,E1,72,76,46,86
	13	38 PRINT"CHECK SUM ERROR - CH ECK DATA STATEMENTS! ": PRINTCH	. CC	81 DATA 12,0F,05,07,0A,0A,1F,	29	,48,6F,46,CD,0D,62,F4,64,08 123 DATA 64,E1,08,F4,08,15,EC
	EC	99 PRINT" HIT RETURN TO SAVE	FE	65,09,14,66,08,07,08,13,07 82 DATA 0A,0A,1F,7B,56,0F,08,		,77,7C,CF,71,74,46,A9,48,6C
		COMPLETED PROGRAM" 40 GETKEYS: IFKEYS<>CHRS(13)TH	D7	66,11,0E,0F,05,0E,64,46,71 83 DATA 4D,53,46,DF,64,66,66,	F3	124 DATA 46, DF, 64, D7, 56, 05, FA ,07, 0A, 16, 0E, 07, 04, 03, 12, 0F
1		EN40		05,07,15,03,66,66,07,66,03 84 DATA FA.15,03,16,07,14,07,	AB.	125 DATA 05,07,0A,69,0B,07,0B
1	10	41 SYS39152 42 :	86	12,0F,08,01,66,03,FA,0A,0F	53	126 DATA 03,FA,07,69,08,66,03 ,FA,64,46,40,48,60,46,67,00
	CE	43 TITLE TOTAL STATE DATUM S	78	85 DATA 08,03,56,65,08,07,1F, 66,66,04,03,64,46,23,40,50	24	127 DATA 62,7C,CD,0D,62,F5,F7
	15 AD	44 : 45 DATA 00,08,08,00,00,9E,32,	14	86 DATA 46, DF, 64, 66, 65, 0F, 08, 15, 03, 14, 12, 03, 02, 65, 04, 1F	FD	,64,07,64,E9,00,62,F5,F7,64 128 DATA 08,64,E1,72,75,46,1E
		30,36,31,00,00,00,20,44,E5	AE	87 DATA 65,12,0E,03,66,13,15, 03,66,09,00,65,12,0E,03,65	05	,48,64,46,CD,00,62,F4,64,07 129 DATA 64,E1,DF,64,D7,66,66
	SC	45 DATA A9,0C,8D,20,D0,8D,21, D0,EA,A9,35,85,01,4C,05,20	ЗE	88 DATA 15,16,07,05,03,65,04,	F3	.16,0A,03,07,15,03,66,11,07 130 DATA 0F,12,66,56,15,09,14
	84	47 DATA 7C,07,02,F4,7E,77,7F, 74,7C,08,08,F4,07,02,EC,73	AF	07,14,64,46,D3,4D,51,46,DF 89 DATA 7C,DF,64,66,66,08,07,		.12,66,14,09,13,12,0F,08,03 131 DATA 66,0F,08,66,16,14,09
	56	48 DATA 77,75,70,08,15,F4,ED, 77,70,08,15,F4,76,46,38,4E	FE	1E,0F,0B,13,0B,66,0B,13,0B 90 DATA 04,03,14,66,09,00,66,	BA	.05,03,15,15,56,64,7C,16,F4
	EØ	49 DATA 44,46,02,62,F4,64,55, 57,19,FA,64,7C,05,62,F4,64	D3	08,03,08,13,65,03,08,12,14 91 DATA 0F,03,15,65,0F,15,66,	F9	132 DATA 08,16,7C,CB,77,75,76,7C,08,F4,08,15,EC,77,7C,CF
	38	50 DATA 64,7C,C7,1E,F4,77,E2,		77,70,64,46,8E,4D,5E,46,DF	BA	133 DATA 71,74,46,C1,48,68,46 ,DF,64,D7,66,03,FA,03,08,12
	66	77,75,7C,05,62,F4,05,62,EC 51 DATA 81,6E,76,6F,7C,C4,46,	BD	92 DATA 7C,DF,7C,DF,54,43,66, 66,0F,08,15,03,14,12,66,02	FØ	134 DATA 03,14,66,00,03,1F,04 ,09,07,14,02,66,05,0E,07,14
	5F	EF, 4E, 45, 46, 00, 62, F4, 81, 6E 52 DATA 77, 75, 76, 6F, EC, 81, 6E,	FA	93 DATA 0F,15,0D,65,12,09,66, 15,07,10,03,66,08,03,08,13	7E	135 DATA 07,05,12,03,14,66,00
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I	1E	55 DATA 70,01,73,75,74,76,77, 6A,77,74,46,98,46,40,46,0F	68	55,07,FA,14,03,07,02,0F,08 97 DATA 01,65,05,13,14,14,03,		.81,6E,77,75,6F,E1,0D,62,F4
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1	79	65 DATA 68,76,66,07,FA,98,46,	ЗА	,67,46,CB,77,74,74,7C,CD,08	E1	148 DATA 74,6F,64,00,66,F6,86 ,10,FA,F4,86,E8,F6,86,10,FA
ı	55	88,4F,4A,46,DF,E0,70,6F,64 65 DATA 54,D6,98,66,1A,FA,98,		,73,7E,E1,75,7E,46,80,4A,64	5A	149 DATA EB,64,46,EC,49,73,46 ,C7,1E,F4,76,E2,7E,7C,DF,64
ı	DA	46,80,4F,48,46,DF,E0,70,6F 67 DATA 64,54,D6,98,66,06,FA,	50	108 DATA 46, CD, 16, F7, 74, 73, 7E ,E1, 75, 74, 46, 98, 44, 65, 46, CD	CF	150 DATA 66,98,66,10,FA,98,66
1	7A	04,1F,66,03,FA,0A,03,15,66 68 DATA 07,0A,0A,07,08,66,06,	55	109 DATA 65,6E,12,00,65,E9,66 .77,75,76,6F,F4,76,66,E1,66	DB	,98,98,66,10,FA,98,64,7C,C4 151 DATA 46,9C,49,70,46,DF,64
1		FA,98,46,58,40,48,46,DF,E0	80	110 DATA 75,75,46,40,4E,52,46 .08,16,F4,08,16,EC,77,7C,0B	16	,66,E8,86,10,FA,F7,85,FB,EB 152 DATA 86,10,FA,F8,43,64,46
1	F3	69 DATA 70,6F,64,54,D6,98,66, 14,F4,98,46,00,4C,49,46,DF	87	111 DATA 15,F4,08,18,7C,CD,08	E4	,BC,49,71,46,CD,02,F4,74,770 153 DATA E9,08,15,ED,0F,0F,F4
1	65	70 DATA E0,70,6F,64,54,D6,8C, 85,14,FA,8D,46,16,4C,56,46	30	112 DATA 16,6F,F4,81,6E,12,00	50	,71,E1,05,F4,05,ED,77,7C,0F 154 DATA 0F,F4,0F,0F,ED,77,46
1	DA	71 DATA DF,7C,DF,7C,DF,46,39, 4C,57,46,DF,64,DD,66,66,12	7F	,6F,EC,08,62,7C,CF,75,75,46 113 DATA 75,48,63,46,DF,64,D7		.60.56.7E.46.CD.08,15,F5,F7
1	50	72 DATA 0E,03,65,02,0F,14,03, 05,12,09,14,1F,66,08,07,1F	10	,65,06,FA,12,09,09,65,08,07 114 DATA 08,1F,66,00,0F,0A,03	A2	155 DATA ED,77,E1,DF,8E,6E,02 ,82,8A,77,75,EC,0F,6F,E0,74
	34	73 DATA 66,14,03,58,11,14,0F,	D4	,15,65,09,08,66,12,0E,03,66 115 DATA 02,0F,15,0D,66,67,68	05	. OF, EC, OF, OF, 6F, 6A, 72, 6A, 77
	06	12,12,03,08,66,11,0F,12,0E 74 DATA 09,13,12,64,46,EB,4C,		.04, FA, 64, 7C, CF, 77, 74, 7E, 46	64	the many on or the on or tribute
	FB	54,46,0F,64,66,66,07,08,1F 75 DATA 66,07,0A,12,03,14,07,	BF	116 DATA 19,48,50,46,15,F4,77,70,C7,0F,F4,76,E2,0B,16,7C	cs	THE DATA OF PE OF PT OD 1E FT
	7F	12,0F,09,08,66,12,09,66,12 76 DATA 0E,03,66,09,14,0F,01,	62	117 DATA 00,77,62,6E,0F,6F,F4 ,0B,62,6E,0F,6F,7C,C4,48,CB	A2	153 DATA 70,45,30,56,70,46,CD
		0F,08,07,09,66,15,07,10,03 77 DATA 02,64,46,90,40,55,46,	58	the contract of the contract o	01	,0F,F5,7F,E9,0B,15,F5,F7,ED 160 DATA 77,E1,DF,E0,74,6F,64
	24	DF.64.66.66.15.03.17.13.03	83	119 DATA 14,03,05,12,09,14,1F ,66,03,08,12,14,0F,03,15,66	DB	,65,10,FA,64,7C,0F,F4,0F,EC 181 DATA 77,7C,CF,73,7F,45,E4
	16	78 DATA 09,05,03,66,09,14,56,66,07,12,66,05,07,08,66,04	1.4	120 DATA 03,FA,1F,59,08,66,04 .FA,64,48,EF,48,6E,46,E7,0D	EB	,56,7A,46,CD,0B,15,F4,ED,77
	SA	79 DATA 03,66,15,09,14,12,03,	1121	in alori tolor i tolori tolori to		

,77,75,6F,E0,74,6F,64,66,10 163 DATA FA,58,66,64,46,8E,56 ,78,46,CD,02,F7,77,74,E9,02 164 DATA F5,74,74,E9,08,15,F5 ,F7,ED,77,E1,DF,8E,6E,02,62 165 DATA 6A,02,6F,E0,77,7F,6F 69 ,64,19,64,46,90,56,78,46,CD 166 DATA 08,15,F4,ED,77,E1,71 .77,48,40,57,79,46,E7,0D,62 167 DATA 7C,CD,0D,62,F5,F7,64 .57,64,E9,0D,62,F5,F7,64 DE ØE 168 DATA 64,E9,00,52,F5,F7,81 168 DATA 64,E9,0D,62,F5,F7,81,6E,77,75,6F,E9,0D,62,F5,F7
169 DATA 81,6E,79,74,6F,E1,70,75,46,79,57,06,46,CD,0D,62
170 DATA F4,64,57,64,E9,02,F5,74,77,E9,02,F5,08,15,EC,77
171 DATA 75,E1,DF,6E,6E,02,62,6A,02,6F,E0,77,7F,6F,64,66
172 DATA 64,7C,05,F4,05,EC,77,7C,02,F4,02,EC,77,7C,CF,70
173 DATA 77,46,32,57,07,46,CD,0D,62,F4,64,D7,64,E9,02,F7
174 DATA 77,75,E9,05,F7,76,E1,DF,8E,6E,02,62,6A,02,6F,E0 1B 4F 97 .0D, 52, F4, 64, D7, 64, E9, 02, F7
174 DATA 77, 75, E9, 05, F7, 76, E1
.DF, 8E, 6E, 02, 62, 6A, 02, 6F, E0
175 DATA 77, 7F, 6F, 64, 66, 64, 7C
.05, F4, 05, ED, 77, 7C, 02, F4, 02
176 DATA ED, 77, 7C, CF, 70, 77, 46
.E6, 57, 04, 46, CD, 0D, 62, F4, 64
177 DATA 57, 64, E9, 02, F4, 74, 77
.E9, 05, F5, 08, 15, E1, 05, F4, 05
178 DATA EC, 77, 7C, 0F, F4, 76, 7C
.0F, 0F, F4, 0F, 0F, EC, 77, 7C, CF
179 DATA 73, 73, 46, 97, 57, 05, 46
.CD, 0D, 62, F4, 64, D7, 64, E9, 02
180 DATA F4, 77, 75, E9, 0F, 0F, F7
.76, E9, 05, F5, 08, 15, E1, 05, F4
181 DATA 05, ED, 77, 7C, 0F, F4, 76
.7C, 0F, 0F, F4, 0F, 0F, ED, 77, 7C
182 DATA CF, 73, 73, 46, AB, 57, 02
.46, CD, 0D, 62, F4, 81, 6E, 77, 75
183 DATA 6F, E1, CB, 77, 75, 73, 76
.CB, 77, 72, 75, 7C, CF, 73, 73, 46
184 DATA 48, 54, 03, 46, CD, 0D, 62
.F4, 81, 5E, 75, 74, 6F, E1, 08, 62
185 DATA 6E, 08, 6F, F4, 15, 62, 7C
.CB, 77, 72, 77, 7C, CB, 77, 72, 75
186 DATA 46, 59, 54, 00, 46, CF, 70
.77, 46, 62, 54, 01, 46, DF, 8E, 6E
187 DATA 02, 62, 6A, 74, 72, 6F, 46
.71, 54, 0E, 46, 08, F7, 70, 72, E1 04 84 90 89 B7 177, 46, 62, 54, 01, 46, DF, 8E, 6E
187 DATA 02, 62, 6A, 74, 72, 6F, 46
171, 54, 0E, 46, 0B, F4, 0B, EC, 77
188 DATA 7C, CD, 0E, F7, 70, 72, E1
175, 71, 46, 13, 54, 0F, 46, C7, 1E
189 DATA F4, 0B, E2, 74, EF, ED, 77
17C, 0B, 62, 6E, 1E, 6F, F4, 08, 62
190 DATA 6E, 1E, ED, 74, 6F, 7C, C4
146, C3, 54, 0C, 46, 0B, 13, 62, F4
191 DATA 81, 6E, 77, 75, 76, 6F, EC
181, 6E, 77, 7E, 6F, EC, 81, 6E, 76
192 DATA 6F, EC, 64, 0B, 03, 08, 13
186, 0C, FA, 64, EC, 05, 62, 46, DA
193 DATA 54, 0D, 46, 0B, 62, 6E, 76
194 DATA 77, 6F, F4, 0A, 62, 46, 8D
154, 0A, 45, DF, 64, D7, 66, 03, FA
195 DATA 15, 03, 0A, 03, 05, 12, 66
196 DATA 09, 14, 66, 08, 03, 08, 13
166, 66, 0E, 0F, 12, 66, 07, 66, 0D
197 DATA 03, 17, 66, 64, 46, 9B, 54
0B, 46, CD, 84, 6E, 77, 7F, 71, 6F
198 DATA F4, 70, 72, E1, 71, 71, 45
14A, 55, 0B, 46, DF, 64, D7, 66, 26
199 DATA FA, 64, 46, 6A, 55, 09, 46
1F, F4, 77, 7C, C7, 1E, F4, 74, E2
200 DATA 0B, 7C, DF, 64, D7, 66, 06
161, 7D, E0, 77, 77, 6F, 7D, 8C, 6E
201 DATA 13, 55, 16, 46, DF, 64, D7
164, 7D, E0, 77, 77, 6F, 7D, 8C, 6E 7B AR 47 201 DATA 13,55,16,46,DF,64,D7,64,70,E0,77,77,6F,7D,8C,6E 27 202 DATA 08,52,5E,1E,5F,5A,72 ,54,77,70,6F,64,66,03,FA,1F 203 DATA 69,08,66,05,FA,64,46 ,37,55,17,46,E7,00,62,7C,CD

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204 DATA 0D,62,F5,F7,64,1F,64 ,E9,0D,62,F5,F7,64,08,64,E1 205 DATA 7E,77,46,D6,55,14,46 ,CD,0D,62,F4,64,1F,64,E1,1F 206 DATA F4,1F,6C,77,7C,00,77 ,62,6E,1F,6F,F4,0B,62,6E,1E 207 DATA 6F,46,D0,55,15,46,C4 ,46,97,55,12,46,CD,1F,F4,F7 208 DATA 77,7E,E1,DF,64,D7,66 ,0B,FA,12,09,08,66,08,07,08 209 DATA 1F,66,00,0F,0A,03,15 ,66,0F,08,66,C8,03,08,13,66 210 DATA 67,66,06,FA,54,7C,CF ,77,74,7E,46,46,52,13,46,DF BA 81 1F 9F 96 90 210 DATA 67,56,06,FA,54,7C,OF,77,74,7E,4E,4E,4E,52,13,4E,DF
211 DATA 64,D7,56,0B,FA,14,03,6B,11,14,0F,12,0F,0B,01,66
212 DATA 0B,03,11,66,02,0F,14,03,05,12,09,14,1F,66,06,FA
213 DATA 64,4E,62,52,10,46,C7,0F,F4,77,E2,77,7E,7C,DE,77
214 DATA 73,6A,64,04,6B,00,64,7D,76,7D,77,7E,7D,0F,7C,C4
215 DATA 72,6A,64,04,6B,00,52
216 DATA 1E,4E,DE,77,73,6A,64,04,6B,07,64,7D,76,7C,CB,77,74,70,46,18,52,1F,46,DE,77,73,6A,21B DATA 7D,15,7C,CB,77,74,70,46,16,52,1F,45,DE,77,73,6A,21B DATA 52,1C,46,15,15,F4,15,7C,15,F4,15,7C,77,7C,12,F4
220 DATA 77,7E,7C,05,F4,0B,ED,73,6E,75,7C,15,F4,15,F5,F4,15,F5,F4,15,F4, 74,7E,46,46,52,13,46,DF CB SC 82 1F D3 C9 44 DA 56 F3, GE, OF, EB, 7E, GF, EA, 7E, 7C
221 DATA CD, OS, FS, 7E, E1, 12, F4
, 76, 7C, 15, F4, 74, 73, 73, 46, E4
222 DATA S2, 1D, 45, 07, 62, F4, 81
, 6E, 12, 6F, EC, 81, 6E, 15, 6F, 7C
223 DATA 04, F4, 76, 46, 88, 52, 1A
, 46, CD, OF, FS, F4, 0B, E1, 07, 52
224 DATA F4, 07, 62, EC, 08, 62, 6E
, 0F, 6F, 7C, 0F, F4, 0F, EC, 77, 7C
225 DATA 04, F4, 04, EC, 77, 7C
225 DATA 04, F4, 04, EC, 77, 7C
225 DATA 04, F4, 04, EC, 77, 7C
226 DATA S2, 18, 46, CD, 0F, F5, F4
, 08, E9, 04, F4, 71, E1, 07, 82, F4
227 DATA 07, 62, EC, 8C, 5E, 08, 62
, 6E, 0F, 6F, 6A, 77, 6A, 74, 7F, 6F
228 DATA 7C, 0F, F4, 0F, EC, 77, 46
, 52, 53, 18, 46, CD, 85, 6E, 07, 62
229 DATA 6F, F5, F7, 74, 73, 73, E1
, 07, 62, F4, 07, 62, EC, 81, 6E, 76
230 DATA 6F, 7C, CF, 7F, 72, 46, 78
, 53, 18, 46, DE, 74, 50, 70, 77
, 73, 6A, 64, 13, 77, 72, 64, 13
, 74, 7C, 54, 7D, 74, 7D, 76, 7D, 77
232 DATA 76, 46, 33, S3, 27, 46, DE
, 77, 73, 6A, 64, 13, 77, 7C, 64, 7D
234 DATA 76, 46, 33, S3, 27, 46, DE
, 77, 73, 6A, 64, 13, 77, 7C, 64, 7D
235 DATA 76, 46, 33, S3, 27, 46, DE
, 77, 73, 6A, 64, 13, 77, 7C, 64, 7D
, 235 DATA 76, 70, 75, 70, 74, 7D
234 DATA 76, 46, 33, S3, 27, 46, DE
, 77, 73, 6A, 64, 13, 77, 7C, 64, 7D
, 77, 7C, DE, 77, 73, 6A, 64, 04, 6E
235 DATA 16, 64, 7D, 74, 7D
, 75, 53, 24, 46, DE, 74, 5A, 81, 6E
237 DATA 15, 15, EC, 74, 6F, 7D, 46
, E7, S3, 25, 46, DE, 77, 73, 6A, 64
, 238 DATA 13, 74, 7C, 64, 7D, 74, 7D
, 76, 7D, 77, 7E, 7D, 77, 7C, CB, 77
, 76, 7D, 77, 7E, 7D, 77, 7C, CB, 77
, 76, 7D, 77, 7E, 7D, 77, 7C, CB, 77
, 76, 7D, 77, 7E, 7D, 77, 7C, CB, 77
, 76, 7D, 77, 7E, 7D, 77, 7C, CB, 77
, 76, 7D, 77, 7E, 7D, 77, 7C, CB, 77
, 76, 7D, 77, 7E, 7D, 77, 7C, CB, 77
, 76, 7D, 77, 7E, 7D, 77, 7C, CB, 77
, 76, 7D, 77, 7E, 7D, 77, 7C, CB, 77
, 76, 7D, 77, 7E, 7D, 77, 7C, CB, 77
, 76, 7D, 77, 7E, 7D, 77, 7C, CB, 77
, 78, 70, 7C, 70, 7E, 7D, 77, 7C, 7E, 7D
, 76, 7D, 77, 7E, 7D, 77, 7C, CB, 77
, 76, 7D, 77, 7E, 7D, 77, 7C, CB, 77
, 76, 7D, 77, 7E, 7D, 77, 7C, 7B, 7D
, 76, 7D, 77, 7E, 7D, 7T, 7C, 7B, 7D
, 76, 7D, 77, 7E, 7D, 7T, 7C, 7B, 7D
, 76, 7D, 77, 7E, 7D 61 85 53 EB 84 79 14 95 4E 51 ØF 54 31 13 37 DØ 240 DATA 53,23,46,DF,64,D7,56 08,FA,15,09,14,12,0F,08,01 241 DATA 55,03,08,12,14,0F,03 BD 15,66,00,09,14,66,08,03,08 DATA 13,65,25,FA,64,46,40 242 LATA 13,55,25,FA,54,46,46,50,20,46,08,16,F4,1F,ED,74
243 DATA 7C,15,F4,08,18,7C,C7,0F,F4,76,E2,C8,16,7C,0E,62
244 DATA 6E,0F,5F,F4,00,77,52
,6E,0F,EC,74,GF,7C,C4,7C,C8
245 DATA 77,75,75,46,78,50,21

,46,C7,0F,F4,76,E2,77,73,70 246 DATA D1,08,08,EC,07,EC, .5A,80,6E,8C,6E,08,62,6E,04 .6A, BØ, GE, BC, GE, ØB, G2, GE, Ø4 247 DATA GF, SA, ØF, EC, 72, GA, 77 , GF, EC, B1, GE, 76, GF, GF, 7C, C4 248 DATA 7C, Ø7, F4, Ø7, EC, 77, 78 , 46, 12, 50, 2E, 46, 04, F4, 04, EC 249 DATA 77, 7C, CD, ØB, 16, EC, 77 , F7, Ø4, E1, 77, 76, 75, 46, 37, 50 250 DATA 2F, 45, D1, ØB, ØB, EC, Ø7 , 6A, 76, 7C, Ø7, F4, Ø7, EC, 77, 7C 251 DATA CD, Ø7, F5, 74, 73, 70, E1 , 77, 75, 73, 46, ES, 50, 2C, 46, DF 252 DATA 64, D7, 66, Ø6, FA, 11, 14 , ØF, 12, ØF, ØB, Ø1, 66, ØB, Ø3, ØB 253 DATA 13, 66, 15, 14, Ø9, Ø1, 14 , Ø7, ØB, 66, 12, Ø9, 66, Ø2, ØF, 15 1B 09 D9 , OF, 12, OF, 08, 01, 56, 08, 03, 08
253 DATA 13, 56, 15, 14, 09, 01, 14
, 07, 08, 66, 12, 09, 56, 02, 0F, 15
254 DATA OD, 65, 04, FA, 54, 46, ED
, 50, 2D, 46, 15, F4, 15, 15, EC, 74
255 DATA 48, FB, 50, 2A, 46, DE, 77
, 73, 5A, 64, 04, 6B, 16, 64, 7D, 74
256 DATA 7D, 76, 46, A9, 50, 2B, 48
, 0A, 62, F4, 81, 5E, 77, 7E, 6F, EC
257 DATA 81, 5E, 15, EC, 77, 5F, 7C
, 07, F4, 7F, 7F, 7E, 72, ED, 07, 02
258 DATA 81, 5E, 07, 6F, 46, 59, 51
, 2B, 46, 07, 62, F4, 64, 64, 7C, C7
259 DATA 81, 5E, 07, 6F, 46, 59, 51
, 2B, 46, 07, 62, F4, 64, 64, 7C, C7
260 DATA 84, 5E, 07, 02, EC, 0F, 6F
, FF, 7C, C4, 7C, 07, 02, F4, 07, 02
262 DATA EC, 74, 73, 72, 46, 6A, S1
, 29, 46, DE, 74, 6A, 0A, 62, 07, 62
263 DATA CC, 74, 73, 72, 46, 6A, S1
, 29, 46, DE, 74, 6A, 0A, 62, 07, 62
263 DATA 7D, 46, 05, 51, 36, 46, DE
, 77, 73, 5A, 64, 13, 74, 7C, 64, 7D
264 DATA 74, 7D, 76, 7D, 77, 7E, 7D
, 15, 4E, 1C, 51, 37, 46, 15, F4, 15
265 DATA EC, 77, 7C, CD, 07, 02, F5
, 7F, 7F, 7E, 72, E1, 77, 76, 7E, 46
266 DATA CC, S1, 34, 46, DF, 64, D7
, 68, 66, 16, 14, 09, 05, 03, 15, 15
267 DATA 66, 05, 09, 08, 16, 0A, 03
, 12, 03, 02, 66, 68, 66, 07, 08, 09 98 44 267 DATA 55,05,09,08,16,0A,03 FØ DA AE 68 3E BA DZ **B3** DB TIA 25 FB

287 DATA SE.39,46,DF.64,D7,66,05,FA,02,0F,15,0D,66,03,14 288 DATA 14,09,14,66,7C,66,64 4E .05, FA, 02, 0F, 15, 0D, 56, 03, 14 288 DATA 14, 09, 14, 56, 7C, 56, 64 .03, 77, 62, 64, 6A, 64, 03, 74, 62 289 DATA 64, 6A, 64, 03, 75, 62, 46 .98, 5E, C6, 46, E6, 74, 7C, E6, 77 290 DATA 73, 46, 87, 5E, C7, 46, C7 .12, F4, 77, E2, 74, 73, 76, 76, 7C 291 DATA C4, 7C, CC, 77, 4G, 4F, 5F .C4, 46, 00, F4, 77, 7C, C7, 0F, F4 292 DATA 76, E2, 16, 7C, CD, 00, F4 .76, E1, 77, 75, 72, 45, 04, 5F, C5 293 DATA 45, 00, F4, 76, 7C, 18, F4 .16, ED, 77, 7C, C7, 1C, F4, 76, E2 294 DATA 16, 7C, CD, 8C, 6E, 0E, 62 .6E, 1C, 6F, 6A, 72, 6A, 77, 70 295 DATA 16, 7C, CD, 8C, 6E, 0E, 62 .6E, 1C, 6F, 6A, 72, 6A, 77, 70 296 DATA 6F, E1, 77, 75, 75, 46, 2A .5F, C2, 48, 07, 52, F4, 08, 62, 6E .297 DATA 1C, EC, 77, 6F, 7C, 08, 62 .5E, 1C, EC, 77, 6F, F4, 08, 62, 6E .298 DATA 34, 5F, C3, 46, C4, 46, 3C .5F, F4, 07, 62, 7C, 00, F4, 77, 46 .299 DATA 34, 5F, C3, 46, C4, 46, 3C .5F, C0, 46, C4, 7C, C8, 46, C9, 5F .300 DATA C1, 46, 08, 62, 6E, 08, 6F .F4, 00, 77, 62, 6E, 05, 6F, 46, F7 .301 DATA 5F, CE, 46, CD, 08, F5, 7F .E1, DF, 8E, 6E, 02, 62, 6A, 77, 75 EB CB 65 22 51 EA 61 55 ØF BD SA 12 300 DATA C1,45,08,62,6E,08,6F,F4,00,77,62,6E,05,6F,46,F7
301 DATA SF,CE,46,CD,08,F5,7F,E1,DF,8E,6E,02,62,6A,77,7S
302 DATA EC,08,6F,E0,74,74,6F,8C,6E,08,6E,08,6F,6A,72
303 DATA 6A,77,70,6F,46,F3,SF,CF,4E,08,F4,08,EC,77,7C,0F
304 DATA F4,76,46,A1,SF,CC,46,C7,1E,F4,0S,E2,0B,1S,ED,77
305 DATA 7C,00,77,62,6E,1E,6F,F4,00,77,62,6E,1E,6F,F4,00,77,62,6E,1E,6F,F4,00,77,62,6E,1E,6F,F4,00,77,76,56,5C,CD,46,CD
307 DATA 02,F7,08,1S,EC,77,75,E1,DF,8E,6E,02,62,6A,02,6F
308 DATA 20,77,7F,6F,54,66,54
7C,02,F4,02,ED,77,7C,05,F4
309 DATA 05,ED,77,46,S0,SC,CA,46,CB,46,7A,5C,CB,46,CD,08
310 DATA F5,7F,E1,DF,8E,6E,02,66,644,77,75,EC,08,6F,E0,74,811 DATA 74,6F,8C,6E,08,62,6E,02,6A,77,75,EC,08,6F,E0,74,811 DATA 74,6F,8C,6E,08,62,6E,08,67,6A,77,7C,6B,46,CB,46,77,7C,CB,46,08,F4,08,EC,77,7C,CB,46,CB,46,08,F4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,F4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,F4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,F4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,F4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,F4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,F4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,F4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,F4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,F4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,F4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,F4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,F4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,F4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,F4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,F4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,F4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,E4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,E4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,E4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,E4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,E4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,E4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,E4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,E4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,E4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,E4,08,EC,77,7C,CB,46,C4,5C,C9,46,88,E4,08,EC,77,7C,CB,46,88,E4,08,EC,77,7C,CB,46,88,E4,08,EC,77,7C,CB,46,88,E4,08,EC,77,7C,CB,46,88,E4,08,E4 AE DE 90 11 AB 30 50 77 .08,6F,6A,72,6A,77,70,6F,48
312 DATA 0E,5C,CB,46,0B,F4,0B
,EC,77,7C,CB,46,C4,5C,C9,46
313 DATA CD,0B,F7,7F,E1,0B,0B
,F4,0B,0B,EC,77,7C,C7,1E,F4
314 DATA 76,E2,7E,7C,DF,8E,6E
,02,62,6A,77,75,EC,1E,6F,E0
315 DATA 74,74,6F,8C,6E,0B,62
,6E,0B,0B,EC,1E,6F,6A,72,6A
316 DATA 77,70,6F,7C,C4,46,CE
,5C,D6,46,CB,46,CB,5C,D7,46
317 DATA 7C,46,D2,5C,D4,46,7C
,46,FD,5C,D5,46,7C,22,FA
,46,4F,5D,D3,46,7C,7C,86,1E
319 DATA 6A,7C,7C,46,6B,5D,D0
,46,7C,7C,66,12,13,14,04,09
320 DATA 6A,7C,7C,46,6B,5D,D0
,46,7C,7C,66,12,13,14,64,65,7C
,7C,46,13,5D,D1,46,7C,7C,66
322 DATA 1E,FA,7C,7C,46,6A,5D
,DE,46,7C,7C,66,6E,05,6F,77
323 DATA 7F,7E,70,66,05,FA,0A
,03,15,66,07,0A,0A,07,0B,6E
324 DATA 08,FA,7C,7C,46,E4,5D
,DF,46,7C,7C,66,0D,FA,74,7E
325 DATA 66,07,12,0D,0F,08,15
,D7,66,02,14,68,66,66,7C,7C
326 DATA 46,80,5D,DC,46,7C,7C
,66,0D,FA,E4,16,F6,12,66,0F
327 DATA 11,66,07,FA,7C,7C,46 AO A7 51 CH 30 ØA ØB 73 79 DF 325 DATA 45,80,50,DC,46,70,70,66,0D,FA,E4,16,F6,12,66,0F 327 DATA 11,66,07,FA,70,70,46,AB,50,DD,46,70,70,66,1E,FA 328 DATA 70,70,46,52,54,DA,46 AE

,7C,22,FA,46,7D,5A,DB,46,7C 329 DATA 22,FA,46,03,FA,EA,FF 329 DATA 22,FA, 18,03,FA,EA,FF,FA,EA,CB FA,EA,FF,FA,EA,FF,FA,EA,CB 330 DATA FA,47,4E,4C,4E,45,45 DB,74,76,70,77,46,03,FA,0A 331 DATA A6,4F,D5,43,12,13,14 .04,08,66,08,03,08,13,56,10 332 DATA 75,59,75,56,0C,FA,48 .F1,0F,FA,66,0C,FA,48,48,05 333 DATA 13,14,15,08,14,65,12 00 56 15 07 00 03,05,12,56 63 F1, 0F, FA, G6, 0C, FA, 4E, 4E, 05

333 DATA 13,14,15,09,14,65,12

,09,66,15,09,0A,03,05,12,13,14

,08,66,12,09,66,03,08,12,13,14

,08,66,12,09,66,03,08,12,03

335 DATA 14,66,05,FA,45,46,45

348,66,04,FA,54,52,46,48,45

,03,FA,E4,E9,0C,9E,EF,69,C3

,037 DATA 45,EF,71,C3,47,EF,55

,66,4E,66,D2,4F,EF,46,C3,EB

,038 DATA EF,4C,C3,89,EF,43,C3

,44,C3,45,EF,33,E6,4E,66,D2

,040 DATA 45,E5,46,F7,80,86,55

,66,94,89,8E,86,56,96,82,AC

,240 DATA 45,E3,88,E2,F5,55,C3

,280,66,80,45,EF,D6,C3,88

,281 DATA EF,4C,C3,89,EF,45,C3

,880,EF,4C,C3,88,E6,46,EF,68

,941 DATA EF,42,C3,89,EF,45,C3

,880,EF,78,D7,88,8E,F7,88

,941 DATA AC,AC,8E,D7,88,8E,D7

,880,86,A2,89,8F,48,86,28

,941 DATA BF,57,86,42,8F,D7,96

,957 DATA BB,8E,07,88,8E,D7

,880,86,42,89,8F,48,86,D7

,880,86,46,80,77,86,42,87,96

,970,86,56,42,87,44,83,45,66

,970,86,54,83,44,83,45,66

,970,86,54,83,44,83,45,66

,970,86,54,83,44,83,45,66

,970,86,54,83,44,83,45,66 4F 7A BB 81 CB 28 346 DATA EB, 8E, 86, 52, 96, 83, 2E .8F. D7, 86, 5A, E3, 44, 83, 45, F6 347 DATA 76, E3, 8A, 5E, 2F, 56, C3 .8A, E3, 88, 5E, 2F, 6E, C3, 88, D6 348 DATA 44, A0, E9, A0, 44, 96, 5C .E3, 44, 8F, 43, 8E, 52, E3, 8A, 7E 349 DATA AF, 56, C3, 8A, E3, 8B, 7E .AF, 6E, C3, 8B, F6, 44, 80, 89, 80 350 DATA 44, 0A, 9D, 4E, EF, 56, E0 .EA, E2, 8E, 66, FE, 89, EF, 46, EE 351 DATA 47, E4, 4E, 66, FC, 89, E4 .4B, F8, C0, 4F, DE, 56, 44, 8C, 56 352 DATA 81, 66, FE, 4F, 5E, D6, 67 .EF, 45, 66, 93, 88, 65, 26, E0, 66 353 DATA C8, E0, 0A, E8, E1, C3, SC DØ E3 EB BB DA BB 21 ЭF EA SA SIG 353 DATA AB, C3, E8, E3, D5, 0C, 0C, F6, A7, EE, 55, AB, C3, E9, CC, 96
364 DATA 4E, E3, 85, C3, E8, E3, 82, C3, E9, AC, EF, AF, E4, 43, C3, E1
365 DATA C0, EE, EF, 46, E4, 45, C3, EF, C0, EC, EF, 4F, 66, 4A, AB, EF, 166 DATA 29, 65, FF, AB, EF, 0B, 66, SB, AB, EF, 11 OF 21 4C EF 366 ,98, A8, EF, 68, 66, 98, 48, EF, 11 367 DATA G6, 98, A8, E5, 46, E3, EF, 66, 98, A8, E3, E2, 56, 98, A8, EF 368 DATA 58, 56, 98, A8, F7, E1, 56, 98, A8, 85, 85, 56, D6, B0, 56, B8 369 DATA A8, 55, E3, E1, 2F, 58, C3 ,E1, D6, 45, A0, EE, 55, E3, EF, E0

370 DATA EC, 2F, 58, C3, EF, D6, 44, A0, EC, 86, 43, D6, EE, 8F, 46, D6 94 A0.EC.A6.43.DG.EE.BF.46.D6

371 DATA EF.EF.4E.56.4A.AB.EF
.29.66.FF.AB.EF.0B.66.9E.AB

372 DATA EF.68.66.9B.AB.EF.03
.66.9B.AB.EF.CD.66.9E.AB.EF

373 DATA 42.66.9B.AB.EF.4D.CB
.57.96.66.BD.AB.AC.AC.0A.BF

374 DATA 43.EF.4D.CB.46.9B.6A
.46.9E.56.BD.EF.45.CB.46.9B
375 DATA E4.43.BC.AC.96.EA.E4
.42.EB.46.9E.6C.5C.20.F6.2C
.376 DATA 20.F6.AC.9C.95.84.E3
.F6.0F.E9.26.6B,AE.42.8F.E9
.377 DATA B6.BE.E6.4G.EF.46.CB
.46.98.6A.46.9B.56.SD.EF.45 62 36 58 79 FB 38 03 09 BE ØE 54 AA PA 53 DH 10 .58.5E.00.99.41,46,08.66.96 389 DATA DF.46,45.26,46.EF.46 .CB.53.96.00.5B.42.E3.46.6F 390 DATA 40.8F.44.86.45.00.DB .BB.AC.EF.43.C3.4F.E4.1C.C0 94 391 DATA OD, E4, 46, EF, 14, C3, 52 92 ,66,10,83,16,88,FE,E8,47,5A
392 DATA 83,62,86,4F,80,00,96
,A9,EF,4C,0A,2F,8F,16,88,FE
393 DATA E8,47,5A,D3,63,AE,A6
,41,96,85,66,D1,82,E3,50,03
394 DATA 51,03,5E,03,5F,03,5C
,86,41,80,4F,96,86,0A,58,82
395 DATA E3,5E,83,40,85,45,0A
,40,82,C3,64,EF,40,C3,77,0A
396 DATA 7A,42,E3,54,E0,55,C3
,50,C0,51,E3,40,C3,5E,E3,41
397 DATA C3,5F,EF,46,03,50,03
,51,03,5E,03,5F,C3,5C,66,72
398 DATA BF,E4,1C,66,10,83,E6
,46,16,88,FE,E8,47,5A,9F,62
399 DATA 46,86,40,8C,36,A8,0A 66,10,83,16,88,FE,EB,47 51 FB EE BF DATA 46,86,40,80,86,88,0A EB .83,85,86,45,96,AC,66,10 DATA 83,15,88,FE,E8,47,5,76,86,96,83,E6,FC,16,88 DATA FE,E8,47,5A,DF,46, 119 95,82,66,86,8E,E3,7E,83 50 BE, 95, 82, 56, A6, 8E, E3, 72, 83, 402 DATA 01, 85, 45, 0A, E0, 82, 66, AF, 82, 83, 7C, 85, 45, 0A, 44, 83, 403 DATA E5, 45, EF, 13, 56, 14, 42, FF, 46, 40, C3, 31, 6A, 46, 5E, 56, 404 DATA BD, EF, 56, CB, 46, 5E, 5A, 46, 5E, 76, 8D, E4, 46, CC, 20, 31 E1 98 405 DATA 60,60,20,31,60,60,08 96 .46.5E,CC,20,31,6C,6C,20,31 406 DATA 5C,6C,CB,46.5E,CC,20 .31.6C,6C,20,31,6C,6C,6C,20 .31.6C,6C,CB,46.5E,E4,44.8C 408 DATA 96,88,EF,49,CB,46,5A .8E,96.EB,AC,07,FA,EE,46,5A 409 DATA 4F,4E,CB,46,5A,EE,46 .40.96,45,0A,DB,BB,83,SE,96 410 DATA BF,C3,4C,EB,47,40,C3 EA AE 410 DATA BF, C3, 40, E8, 47, 40, 41, 04, 23, 45, C3, 31, 64, 45, 55 DATA 56, BD, EF, 56, CB, 46, SE

Continued on page 109



,44 EF B 03

EB EB

96 98 F5

EE BE

46

C3

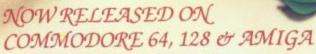
5A 47 66

EA CB

C3 SE



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Repton 3

This month we take a long look at Superior Software's fascinating Repton 3.

By Marie Curry

A reade action, strategy and games designer rolled into one. That's how you can sum up Repton 3 in one sentence.

The basic structure of the game is that of a maze which is chock-a-block with various hazards. In fact virtually everything is potentially dangerous, so watch out. Having said that, don't presume that this is merely another version of pacman. It's not even vaguely similar to that old and hackneyed favourite. The colourful graphics and intricate mazes are just a small part of the entertainment value of this game.

Once you've had a go at the first screen you will have the general idea. The most important objects on screen are the boulders. These block your path in many directions but you can move them about to make your way through the maze. However, they are often balanced very precariously and you will have to get the knack of which ones you can move without being flattened completely. For instance a boulder which is balanced on earth or on a barrier section will not move unless you push it, however a rock which is balanced on another rock or a diamond will slide off and if you're in the way that's the end of you.

When you start the first screen, my advice is to press 'M'. This will call up a map of the maze and you can work out your strategy. The problems which you face are many. If you grab the wrong diamond first then it could mean that there's no way that you can finish the screen as you may have dislodged a rock which blocks your path to some yet unclaimed gem.

The objectives of each screen are threefold. You must collect all the diamonds collect the golden crown and kill all

the monsters. This gives you quite a lot to think about but no matter how difficult it is there is always a solution, at least so Superior Software claims, although a great amount of lateral thinking is required to sort some of the messes out.

The hazards (other than falling boulders) come in many guises. The monsters, and very sinister looking they are too, hatch out of eggs and chase you remorselessly until you squash them with a rock. There is no way that you can avoid hatching the eggs since there are always diamonds which you need that are supporting them. You need to think ahead and spy out a convenient boulder to use when they come at you on the rampage.

There are also spirits, which are deadly, however these must be put in cages. The trick here is to clear the path to the cages so that when you let the spirits out they'll make a bee line for imprisonment. As soon as they get into the cages they turn into diamonds and you're laughing. If you try and squash a spirit then you only stun it and it gets a bit bewildered for a while.

You may think that if you've got a map to study, and can work out exactly what your strategy will be per screen then there's no tension in the game. However there is a time limit on each screen and sometimes, especially if you're a novice feeling your way, this is hopelessly inadequate. To aid you in your race against the clock there are time-capsules which you can pick up which add invaluable seconds to your deadline.

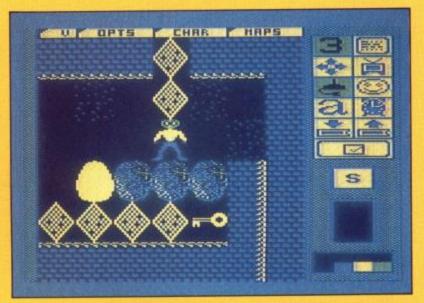
Remember that when you've collected the diamonds and crown and killed all the monsters, you must find the time bomb and defuse it (this is only a matter of passing over it).





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Skulls are also deadly but at least they don't chase you and keys will open safes to reveal yet more diamonds. On at least one screen the timing of the opening of the safes is all important so beware. You must always look ahead to the consequences of your actions. A bit like chess but rather more light hearted.

A very important factor on some screens are the transporters. Some screens are divided into several sections and the only way to compete them is by whizzing around in transporters. However, each transporter can only be used once, so that in most cases, there's no going back. If you enter the transporter too soon, e.g. before you've killed a monster or got all the treasure then you'll find that you cannot complete the screen, so once more there's a lot of forethought involved.

There are 24 levels in all, each getting progressively more difficult. These are divided into three sections of eight. One of the best features about this game is that when you finish a screen you are given a password so that you can return to it whenever you like, saving you the boredom of completing the same screens over and over again every time you want to play the game.

A character designer and screen designer are also included so that you can create mazes for yourself if you get bored with the ones supplied on the original version. This gives another fascinating dimension to the game along with the possibility of infinite variations.

All in all this game has so many attractions that it cannot be too highly recommended. It's totally addictive and there is enough variation to suit several different kinds of games players. Superior Software lives up to its name.

Touchline

Title: Repton 3. Supplier: Superior Software, Regent House, Skinner Lane, Leeds LS7 1AX. Machine: C64. Price: £9.95 cassette, £11.95 disk.

Originality: 7/10. Playability: 10/10. Graphics: 8/10. Value: 10/10.

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Word-Pro Add-On

Many Plus/4 owners find the built in word processor inadequate. Here, we bring you a program which will vastly improve the quality of the hard copy you can generate

By William Sellers

The Plus/4 is now available at a very reasonable price as a word processing package, with a disk drive and MPS803 printer. The built in software has been widely criticised, but, in fact the printer is probably the weakest link.

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It has a rather unattractive character set which, due to economies on the printing head, only uses 7*5 dots per character which does not allow it to produce true descenders and so letters such as g and y are particularly ugly. This problem can be overcome by redefining these letters and using the graphics mode so that the descending parts can be printed on the line below. The improvement is really quite impressive.

The software itself is also not very well matched to the printer, and does not take full advantage of the printer facilities since the justification is performed on a whole character space resolution whereas the printer allows dot precision to be used for spacing. This allows a much more even layout to be achieved with all the gaps appearing exactly the same size. There is also no software underline function, but this can easily be implemented in association with the descenders.

How It Works

The program works by intercepting the character output to the printer and stores a whole line which it can then reorganise if justification is required. The modified line is then printed character by character, replacing the redefined letters and removing control codes.

After a graphic mode linefeed, the line is then printed again, this time taking care of the descenders and the underlining. Normally, such output redirection is achieved by changing the output vector at \$0324. Unfortunately, this general output routine is not called for printer output in this instance and the specific serial bus output routine is used which does not have a RAM vector. Thus the only way to redirect output is to find the output call in the inbuilt software and change it to jump to the new routine.

This would not, of course, be possible if the program ran in ROM but in fact the Plus/4 built in software merely loads itself from ROM into RAM and once here can be altered. To do this, the subroutine call needs to be changed after the program has been moved to RAM otherwise the change will be overwritten. This can be done by changing the output vector to point to a short routine in the cassette buffer so that when the copyright message is printed, the program jumps to this routine which changes the required subroutine call and then resets the vector before returning to the main program. Now, when printer output is performed, the program jumps to the new output routine as required.

In Use

Type in the Basic loader, save a copy, reset the computer, load it again and run it. After an initial wait while the

machine code programs are POKEd into place, the built in software is entered in the normal fashion except that the copyright message has been altered. The word processor can now be used completely normally since the program is stored in an area of memory that appears to be unused. All normal word processing commands can be used, though the effect of printer control codes on the user defined characters are uncertain so that the ASC command should be avoided.

It was decided that the reverse graphics facility was not very useful but that the double width characters were needed for titles. Thus, they can be switched on by a <C=> <*> character inserted into the text (not in reverse graphics) and off by a < SHIFT > <->. Similarly the software underlining is switched on by < SHIFT > <+> and off by the < SHIFT > <-> again.

The software underlining can be used anywhere, even for single letters within a word. Double width control is similar but it is not permitted in lines that are justified since there is no facility to correct for the double width characters. Double width is also switched off by a carriage return but the underline needs to be switched off specifically. If active, whole series of documents and also page numbers can be underlined.

All printing is performed with graphic mode linefeeds. Since two line are printed per line of text the line spacing is 36 lines per seven inches so

YOUR COMMODORE february 1987

that for standard sized paper the PAGEPAUSE mode will be needed to allow the paper to be lined up properly again. Also, by having to do twice as much printing, and by having user defined characters which disables the bidirectional printing, the printing speed is considerably reduced. It is suggested that draft versions be produced without the add on program which can be reserved for the final draft. The control characters will be printed in the normal mode and so these facilities can be checked.

The Program

Lines 10040-10410 – This is the routine that resides in the cassette buffer (\$0333-03F2) which is called by the first output from the in built software. It resets the output vector to its normal value of \$EC4B and changes the subroutine call at \$3B50 to JSR \$7000 so that the new output routine is used. It also changes the copyright message to indicate that the modified version is in use.

Lines 10450-10880 - are the main output routine. This starts at \$7000 which is free when the word processor is being used. It first checks that the output is for the printer rather than the disk drive by looking for the device number at \$AE. It then stores the characters in a buffer at \$7900 until å carriage return is detected. When this happens, its position from the start of the line is checked with respect to the right margin which is stored at \$7E73. If they are equal then the line may need rejustifying and the justify routine is called. Then the true descender output routine is called to print the buffer contents. The registers are reset to their calling value before returning to the main program.

Lines 10900-11950 - perform the necessary line reorganisation required for the improved justification. This first of all finds the line length and the left margin. It then counts the number of non-space and non-control characters, and the number of gaps between words. This information is used to calculate the ideal gap size. First of all the difference between the linelength and the number of characters is divided by the number of gaps. The result is the number of whole character spaces between each word. The remainder is multiplied by six and then divided by the number of gaps again. The result is the number of additional dot spacings between words and the remainder is the number of gaps to have an extra dot. To insert the correct gaps between words, the words are copied one by one to a second buffer at \$7A00 and the correct gap inserted between by the insert gap subroutine. The second buffer is then copied back to the first before returning to the main output routine.

Lines 11970-12210 – insert the required gap, as predicted by the calculations performed by the calling routine, into the line copy in the second buffer.

Lines 12390-12740 – These are an eight bit integar multiply and divide routine. These can only handle numbers up to 255 but, because of this limitation, are very much quicker than the Basic arithmatic routines. This means that the rejustification can be performed with no noticeable delay.

Lines 12760-13820 – perform the true descender output. This requires the printer head to make two pases of the output buffer the first to print the normal letters and the top halves of those that descend; the second to print

the descenders and any underlines. Both pases are performed in the same way: letter by letter; checking, for control characters, spaces and redefined characters. The lower case k is also redefined so the character lookup for the upper line is different to that for the lower line. UL is used as a flag to check whether underlining is active or not. This does not effect the upper pass, but is important for all non-blank characters in the second pass, if UL is zero, underlining is not performed. EF is a similar flag for double width mode - this is only needed for the user defined characters since the other double width control is intrinsic to the printer.

Lines 13840-13940 – are used to output bytes in bit map mode – it is used for the single dot space character and the carriage returns at the end of the line.

Lines 13960-14210 - These are the lookup routines to see whether a character needs to be redefined. If the character is not found the Y register returns zero, otherwise the position number in the character list is returned.

Lines 14230-14510 - use the information from the lookup tables to find the correct character data and then output the user defined character.

Lines 14530-15200 – store the new character information in the standard seven dot + 128 format used by Commodore printers. Thus, these characters can easily be changed if a different design is preferred.

Lines 14710-14820 - This is a short routine that controls underline and double width for the user defined characters.

```
PROGRAM: PLUS3-PLUS
                                      >AIHENPRINT"ERROR IN LINE ";L:EN
                                                                           210 DATA3,104,170,104,76,210,259
READY.
                                      130 L=L+10:GOT070
10 REM PLUS3-PLUS
                                                                            220 DATA32, 32, 32, 80, 76, 85, 83, 51,
                                      140 IFD<>923+1THENPRINT"ADDRESS
20 REM <C> WILLIAM SELLERS 1986
30 REM RESET COMPUTER, LOAD 8 RU
                                      ERROR": END
                                                                            230 DATA45,77,79,68,32,86,49,46,
                                      150 DATA72,138,72,169,75,141,36,
                                                                            482
40 POKESS, 255: POKES6, 111: CLR
                                                                            240 DATA48, 13, 13, 13, 32, 32, 32, 32,
                                      160 DATA169,236,141,37,3,169,0,1
SO PRINT"[CLEAR]PLEASE WAIT ....
                                                                            215
                                      41,896
                                                                            250 DATA60,67,62,32,49,57,56,54,
                                      170 DATA94,59,169,112,141,95,59,
60 D-819:L-150
                                                                            437
                                      162.891
70 T-0
                                                                            260 DATA32,87,73,76,76,73,65,77,
                                      180 DATAO, 169, 32, 157, 162, 51, 232,
BO FORX-1TOB
                                                                            559
                                      224,102
90 READA: IFA--1THEN140
                                                                            270 DATA32,83,69,76,76,69,82,83,
                                      190 DATA167, 208, 248, 162, 0, 189, 10
100 POKED, A: D-D+1: T-T+A
                                      6,3,1083
110 NEXT
                                                                            280 DATAC, -1
                                      200 DATA240,7,157,162,51,232,76,
120 READA: IFA -- 1 THEN 140: ELSEIFT
```

290 D=28672:L=380 300 T=0 310 FORX-1TOB . 320 READA: IFA--1THEN370 330 POKED, A: D-D+1: T-T+A 350 READA: IFA = - 1 IHEN 370: ELSEIFT < ATHENPRINT"ERROR IN LINE ":L:EN 360 L-L+10: GOTO300 370 IFD<>29558+1THENPRINT"ADDRES S ERROR": END 380 DATA8,142,102,113,140,103,11 3.141.862 380 DATA104,113,166,174,224,4,24 0,6,1031 400 DATA32,168,255,76,42,112,201 192,1078 410 DATA144, 3, 56, 233, 96, 174, 105, 420 DATA157,0,121,238,105,113,20 1,13,948 430 DATA240, 11, 174, 102, 113, 172, 1 03,113,1028 440 DATA173, 104, 113, 40, 96, 169, 0, 141,838 450 DATA114, 113, 173, 115, 126, 205, 105,113,1064 460 DATA208, 8, 169, 1, 141, 114, 113, 470 DATA85,112,32,171,113,169,0, 480 DATA105,113,76,42,112,162,0, 189,799 845,045,5E,105,5E5,151,0ATAD 084 ,202,1276 500 DATA142,106,113,173,105,113, 55,237,1045 510 DATA106, 113, 141, 108, 113, 169, 520 DATA109, 113, 174, 106, 113, 189, 0,121,925 530 DATA201, 33, 144, 7, 201, 123, 176 540 DATA238,109,113,232,201,13,2 08,237,1351 550 DATA169,0,141,110,113,168,17 4,105,981 560 DATA113,189,0,121,232,201,32 240.1128 570 DATAS, 160, 0, 201, 13, 208, 242, 7 6.909 580 DATA174,112,192,1,240,235,23 8,110,1302 590 DATA113, 160, 1, 76, 145, 112, 173 108.888 600 DATA113,56,237,109,113,141,1 69,113,1051 610 DATA173, 110, 113, 141, 170, 113, 32,143,995 520 DATA113,173,169,113,141,111, 113,173,1106 630 DATA170, 113, 141, 141, 113, 169, 6,141,994 640 DATA142, 113, 32, 115, 113, 173, 1 41,113,942 650 DATA141,169,113,173,110,113, 141,170,1130 660 DATA113,32,143,113,173,169,1 13,141,997 670 DATA112,113,173,170,113,141, 113,113,1048 680 DATA162,0,160,0,189,0,121,20 690 DATA32, 208, 8, 153, 0, 122, 232, 2 700 DATA76,244,112,189,0,121,201 710 DATA240, 12, 201, 13, 153, 0, 122, 240,981 780 DATA19,232,200,76,3,113,32,5 3,728

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730 DATA113,232,189,0,121,201,32 ,240,1128 740 DATA248,76,3,113,153,0,122,1 62,877 750 DATAO,189,0,122,157,0,121,23 5,821 760 DATA201,13,208,245,95,142,10 7,113,1125 770 DATA174,111,113,240,9,169,32 153,1001 780 DATAO, 122, 200, 202, 208, 249, 17 4,112,126 790 DATA113,240,9,169,128,153,0, 122,934 800 DATA200, 202, 208, 249, 173, 113, 113,240,1498 810 DATA9, 206, 113, 113, 169, 128, 15 3,0,891 820 DATA122, 200, 174, 107, 113, 96, 0 0,812 H30 DATAO,0,0,0,0,0,0,0,0 B40 DATAC,0,0,160,8,169,0,10,347 B50 DATA46,142,113,144,9,24,109, 141,728 860 DATA113,144,3,238,142,113,13 6,208,1097 870 DATA238,141,141,113,96,0,0,1 60,889 880 DATAB, 169, 0, 14, 169, 113, 42, 20 5,720 890 DATA170,113,144,6,237,170,11 3,238,1191 900 DATA169,113,136,208,238,141, 170,113,1288 910 DATA96,0,0,162,0,189,0,121,5 68 920 DATA232,201,123,240,248,201, 125,208,1578 930 DATA13,169,15,32,168,255,169 ,0,821 940 DATA141,156,114,76,173,113,2 01,127,1101 950 DATA208,16,173,114,113,208,2 22,169,1223 960 DATA14, 32, 168, 255, 141, 156, 11 76.956 970 DATA173,113,201,13,240,30,32 980 DATA114,192,0,208,11,201,128 208,1062 990 DATA13,168,32,158,114,76,173 113,847 1000 DATA32,280,114,75,173,113,3 2,168,928 1010 DATA255,76,173,113,168,32,1 58,114,1089 1020 BATA162,0,142,157,114,189,0 121,885 1030 DATA232,201,32,240,3,141,15 ,114,1120 1040 DATA201,13,208,5,168,32,158 114,899 1050 DATA95,201,123,208,8,169,1, 1060 DATA155,114,76,5,114,201,12 5,208,998 1070 DaTa16,169,0,141,155,114,14 ,156,892 1080 DATA114,169,15,32,168,255,7 6,5,834 1090 DATA114,201,127,208,16,173, 114,113,1055 1100 DATA208,195,169,14,32,168,2 55,141,1182 1110 DATA156,114,76,5,114,201,12 8,208,1002 1120 DATA21, 173, 155, 114, 208, 8, 16 1130 DATA32,158,114,75,5,114,160 136,795 1140 DATA32,158,114,76,5,114,201 ,32,732

1150 DATA176,6,32,168,255,76,5,1 14,832 1160 DATA201,129,176,246,32,196, 114,192,1286 1170 DATAO, 240, 6, 32, 220, 114, 76, 5 ,693 1180 DATA114,173,157,114,240,5,1 73,155,1131 1190 DATA114,208,8,169,32,32,168 ,855,986 1200 DATA76,5,114,169,96,32,168, 255,915 1210 DATA75,5,114,0,0,0,169,8,37 1220 DATA32,168,255,152,32,168,2 55,169,1231 1230 DATA15, 32, 168, 255, 169, 0, 141 , 156, 936 1240 DATA114,96,160,6,217,189,11 4,240,1136 1250 DATA3,135,208,248,95,42,71, 74,878 1260 DATA75,80,81,89,160,5,217,2 14.921 1270 DATA114,240,4,136,208,248,9 6,200,1246 1280 DATA200,200,200,200,200,96. 42,71,1209 1290 DATA74,80,81,89,142,107,113 136,822 1300 DATA140,26,115,140,141,113, 169,5,849 1310 DATA141, 142, 113, 32, 115, 113, 172,141,969 1320 DATA113,162,5,169,8,32,168. 255,912 1330 DATA185,27,115,200,32,82,11 5,202,958 1340 DATA208,246,169,128,32,82,1 15,169,1149 1350 DATA15,32,168,255,173,156,1 14,240,1153 1360 DATA5, 169, 14, 32, 168, 255, 174 ,107,924 1370 DATA113,96,0,184,196,196,19 6,248,1229 1380 DATA128, 128, 128, 253, 128, 255 ,144,144,1308 1390 DATA168,196,252,196,196,196 184,184,1572 1400 DATA195,196,196,252,188,192 192,192,1604 1410 DATA252,129,130,130,130,129 130,1158 1420 DATA130,128,128,131,128,128 128,128,1030 1430 DATA128, 128, 128, 128, 131, 128 130, 130, 1031 1440 DATA130,129,72,173,26,115,2 01,6,852 1450 DATA176, 4, 104, 76, 102, 115, 17 3,155,905 1460 DATA114,240,247,104,9,136,7 2,173,1095 1470 DATA156, 114, 208, 4, 104, 76, 18 8,255,1085 1480 DATA104, 32, 168, 255, 76, 168, 2 1490 POKEBO4,51: POKEBO5,3 1500 SY31525: 3-PLUS-1

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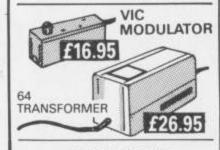
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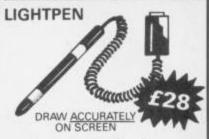


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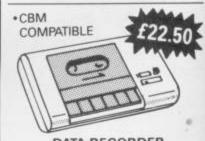


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Games Reviews

For those hours when you really need to relax, then perhaps a shot of adrenalin from a few of these new releases will pep you up.

HEART OF AFRICA

SK

Hiram Perkins Primm was an eccentric millionaire. Eccentric because he had an obsessive love for Africa – the dark continent – as well as several theories not universally acknowledged by so called experts. Was – because he has disappeared on one of his many expeditions and is now presumed dead.

How you came to be involved in all this is an interesting story. Because his family showed no interest whatsoever in Hiram's quest for the legendary tomb of Ahnk Ahnk, he promptly cut them all out of his will and specified that none of them should receive a penny. Instead, his money was to go to a suitable candidate who would use the opportunity to shed light on to the dark continent, who knew nothing about Africa, was prepared to go alone and who could complete the task within five years.

Thus it is that you find youself in Cairo in January, 1890,

GOT A CANOE
JUNE - 1890

HEEKS FOOD
19
HONEY
29
GIFTS
11 HAND
HAP
HAP
HAP

(USE STICK TO PICK, THEN PRESS BUTTON)

equipped with nothing and with only \$250 in your pocket. From the notes of Mr Primm that you have been able to trace, it seems that your journey will take you the length and breadth of Africa as you search for clues that, hopefully, will lead you to the tomb of Ahnk Ahnk. The game is primarily one of exploration. You wander around looking for treasure and information, making sure that at all times, you have

sufficient supplies for the next stage of your journey.

Wandering into a town or village changes the view as a large scale map of your immediate surroundings. Bumping into a passing native whilst holding a gift is likely to get you a map of the huts. Some of these can be entered and you can buy or sell various items. Give an appropriate gift to a village chieftain and he will reward you with clues, all of which can be recorded in your diary. Only the big cities will be able to sell such 'luxury items' as canoes, shovels or guns. There are also pubs for saving your current position.

Controlling the game is very simple. You can move your character anywhere on the huge scrolling map providing that you keep to the limits of the terrain. Pressing the fire button allows you to access one of four icons. The diary contains all your clues and is very well presented. Options is used to get status reports – where am I and how am I – as well as letting you bury a supply of items for future use. The hand icon lets you juggle items between hand and backpack and the compass allows you to examine the map.

Heart of Africa is a strange type of game. A bit of strategy, a bit of problem solving and a lot of exploring. Graphically, it is quite crude and the combination of these factors and the fact that the game is only available on disk mean that it will have limited appeal. This is a pity because the game itself is really quite good and if you fancy yourself as a latter day Dr Livingstone, is well worth investigating.

G.R.H.

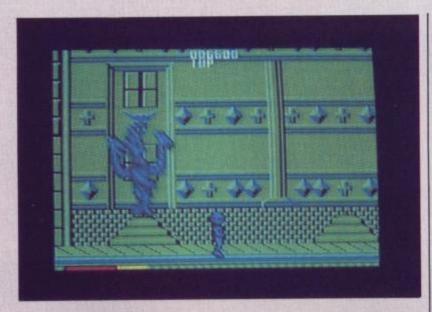
Touchline

Title: Heart of Africa. Supplier: Ariolasoft, 68 Long Acre, London WC2E 9JH. Tel: 01 836 3411. Machine C64. Price: £14.95.

Originality: 7/10. Graphics: 5/10. Playability: 8/10: Value: 7/10.

GALVAN

E vil reigns on the planet Cynep and the Cosmo Police have been trying to stamp it out for many a long year. Their efforts have not been enough though and slowly, they have been eliminated until now, you are the only surviving



member of that force. Can you succeed where all the rest have failed?

To make the plot even more ludicrous, you go into the Techno Caverns unarmed save for a hefty punch. This however only works against some of the creatures so finding a source of weaponry is of paramount importance. Fortunately, there just happen to be a series of power pyramids scattered around the caves. Collecting these will increase both your own power and give you extra firepower in increasing stages. The first pyramid gives you a suit of armour and a gun, the second an arc blaster and the third a white bolt neutraliser although these last two weapons only last for a short period of time. Losing a life reduces you to punching your way out of trouble again. Extra pyramids can also be gained by killing a blue meanie with either fist or gun. At the bottom of each level is a multi headed demon. Each of the heads must be destroyed in turn by jumping up and shooting in mid leap. All this as you also attempt to avoid the lethal lazer bolts the heads are spitting at you.

Graphically, the game is only average and that term can be used to describe Galvan as a whole. Has anyone succeeded in destroying the evil? No-one knows but my guess is that they all died of boredom rather than at the hands of the demons.

G.R.H.

Touchline

Title: Galvan. Supplier: Imagine, 6 Central Street, Manchester M2 5NS. Tel: 061 832 6633. Machine: C64. Price: £8.95. Originality: 5/10. Graphics: 6/10. Playability: 7/10. Value: 4/10.

AMERICA'S CUP

The America's Cup is one of the most exclusive sports only fully appreciated by those who know the difference between light genoa's and spinnakers, gybes and tacks. Now the sailing crew have a computer game.

The rest of the world only discovered the America's Cup when the Americans were finally beaten after holding the trophy for over 100 years.

At the time of writing we might even stand a chance

through our boat White Crusader!

Now you can win this elusive trophy without getting your hulls wet.

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Sailing is quite a complex process particularly when the wind is blowing in completely the wrong direction. To make things worse the America's Cup course is designed so this happens most of the time!

The secret appears to be in your initial sail selection and

when you change them during the race.

This will be beyond most beginners and will only make sense after digesting the reams of sailing theory that accompany the game.

Perhaps then you will be able to take on the Defender in a seven race series. To make things worse you're not even

allowed to ram your opponent!

Once you've mastered the controls and begun to put the theory into practice then the games mechanics and screens that pilot the route and relative positions on the course begin to make sense. Unless you're a yachting enthusiast or are prepared to learn then give this one a miss.

T.H.

Touchline

Name: America's Cup. Company: US Gold, Units 2/3, Holdord Way, Holford, Birmingham, B6 7AX. Price: £9.99. Machine: C64.

Originality: 9/10. Graphics: 6/10. Playability: 4/10. Value: 6/10.



CRYSTAL CASTLES

hereas Yogi Bear has a distinct preference for picnic hampers and Winnie the Pooh likes nothing better than getting stuck into a pot of hunney, Bentley Bear has decided that there are more important things in life than his stomach. He collects diamonds. And rubies. And sapphires. In fact BB collects any gem he can lay his paws on. Luckily for him, there just happen to be a whole series of plateaux just teeming with goodies if only he can avoid the protecting nasties.

After all the hype surrounding this game including such quotes as 'knocked me off my feet' and 'beyond description', I was expecting something pretty sensational. What did we get? 3D Pacman! Yes, you can run round assorted mazes collecting power pills, sorry diamonds, whilst avoiding pursuing nasties. OK, so there are extra touches such as lifts and secret passages and so on but not enough to make the game in any way outstanding. There are a variety of nasties to avoid – mad marbles, skeletons, tree spirits and bees. Some can be leapt over rendering temporary paralysis and

BERTHILDAS CASTLE
LEVEL 1

while. These and the bonus honey pots should be collected carefully though as the nasties cannot get past them whilst they are blocking the path. There are four different skill levels to choose from (all they do is speed up the action) and the levels must be played in turn. At least on the multiload cassette, you can ply the sets of six levels in different orders.

Although the arcade version may have been stunning, the 64 version is graphically very poor indeed with wishy washy colours and indistinct sprites. The game does have a certain element of 'just one more go' about it but the overall effect is one of huge disappointment.

G.R.H.

Touchline

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Title: Crystal Castles. Supplier: US Gold, Units 2/3, Holford Way, Holford, Birmingham B6 7AX. Tel: 021 356 3388. Machine: C64. Price: £9.95.

Originality: 5/10. Graphics: 5/10. Playability: 7/10. Value: 6/10.

JUDGE DREDD

Here, at last, is your chance to patrol Mega City One as the, one and only, Judge Dredd.

Your job is to cruise the city on your "Iawmaster" motorbike looking for perps that need justice.

Crime reports flash up on your map warning that muggings, robberies, murders, alien seed deals and stookie glandings are in progress and you must rush to the scene to arrest the culprit.

The scene of the crime is always part of the sprawling streets of Mega City One.

In the game these are presented by screens of platforms, doors, lifts, rats and dubious looking people of such

delightful areas as the Norman Tebbit Block, Sump Industries and the swamp.

Arresting Judge Dredd style means beating the Perp into a pulp or blasting him away if he "doesn't come quietly".

Some perps of the lesser crimes such as mugging may stop if you tell them to or perhaps fire a warning shot. However the hardened criminals such as murderers, tobacco smokers and stookie glanders will shoot it out with you.

The well equipped Judge about town has six types of bullet designed to take out the most persistent perp. Normal, high explosive, and incendiary stop anything in their path, heat seeking bullets are useful for shooting around corners as are riccohet bullets but care must be taken not to shoot yourself! Finally armour piercing bullets allow you to fire through the platforms.

Each building is divided into levels and so from the crime report you can track down the perp. Once you've arrested him (gunned him down) you're returned to the patrol screen where you must rush to the next crime.

You have to be quick as crime reports constantly come through. If there's more than eight the city is swamped in crime and your game ends.

The game captures the spirit of crime fighting in the future although it has strayed from the 2000AD Judge Dredd character which will no doubt annoy comic connoisseurs. The rest of us will enjoy it.

Touchline

Name: Judge Dredd. Company: Melbourne House, 60 High Street, Hampton Wick, Kingston-Upon-Thames, Surrey KT1 4DB. Tel: 01 943 3911. Machine: C64. Price: £9.95. Originality: 6/10. Graphics: 9/10. Playability: 8/10. Value: 8/10.



WORLD GAMES

Collowing on from the success of Summer and Winter Games, World Games gives you the chance to try your skill at eight more assorted events. And a stranger mix of competitive sports, you could not hope to meet anywhere else. Six of the events are limited to the country of origin whilst only two have a more widespread appeal.



First stop is Russia, a country that has dominated weightlifting, especially at super heavyweight levels for some years now. You must compete in both the snatch and clean and jerk. Timing the various elements of the lifts is the key to success here and there is also considerable psychological strategy in selecting which weights to attempt to give you maximum success and put your opponents under maximum pressure.

Barrel jumping from Germany is the second event. Coordinate the movements of your skater to gain maximum speed and then time your leap in order to clear the chosen number of barrels. Cliff diving is Mexico's entry in the list of silly things to do. Not content with using a swimming pool like everybody else, they deem it to be more fun if you dive from a height of 118 feet, trying to miss the jagged rocks and judging it so that you land in the water when there is sufficient depth from the waves to avoid giving you a nasty headache. I'm only surprised that they didn't throw in a few sharks while they were at it.

Slalom ski-ing from France is an event often copied in computer games. Suffice to say that this is the hardest of the events and as yet, I have not even managed to complete the course, let alone do so without missing a gate. Monty Python fans will love the next sport as it allows you to play a Canadian Lumberjack trying to keep your feet as you go log rolling. Just to add to the fun, you must do this when there is someone else on the log, the game being to give him an early bath before he does likewise to you. Staying in North America, Bull Riding is the event chosen by the good old US of A. You can choose from four different bulls of assorted severity, the object being to stay on its back for at least eight seconds as it twists and bucks.

Back to the land of the porridge eaters for tossing the caber. Run up holding a telegraph pole and flip it over as far as you can. Not as easy as it sounds. A successful throw is accompanied by a Scottish jig, failures result in the caber landing on your foot or head, knocking you gradually into the ground in best cartoon tradition. The accompanying music is authentic bagpipes – i.e. awful. Finally to Japan for Sumo Wrestling, an event that shows that there is hope for us fatties yet. Thirty five stones of blubber on either side of the ring attempt to make their opponent either topple or step out of the ring.

As with all these Epyx games collections, you can have the most fun if there are several of you playing against each other. If you enjoyed the previous releases, then you will have to add this to your collection although personally, I

preferred Winter Games. Surely, there can't be many sports now that have not been used. G.R.H.

Touchline

Title: World Games. Supplier: Epyx/US Gold, Unit 2/3, Holdord Way, Holford, Birmingham B6 7AX. Tel: 021 356 3388. Machine: C64. Price: £10.95.

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Originality: 7/10. Graphics: 8/10. Playability: 8/10. Value: 8/10.

LEADER BOARD TOURNAMENT

Four new 18 hole courses to frustrate and annoy Commodore golfers are available on this first tournament disk.

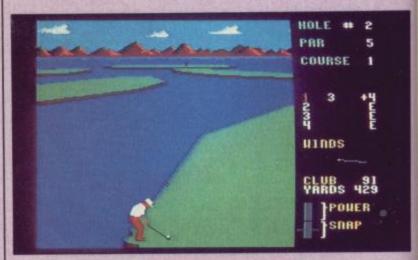
Available in either tape or disk format the new courses load in from the original Leader Board program (which you must have and in the same format) Tape Leader Boards can only load in the courses from tournament tapes!

Naturally the game plays the same with up to four players competing in either a 18, 36 or 72 hole tournament.

Club selection, aiming and swing are all controlled from simple joystick actions leaving you to worry about the hole itself.

Like the original courses the tournament holes are constructed from a series of islands marooned in a lake that likes to swallow golf balls by the dozen.

Most of the game will be spent pouring over the course diagrams working out which club is best to hop from one island to the next until you can finally sink the ball into the hole. Your caddy's no use, he's obviously too busy rowing you around the course in a boat!



The original Leader Board stormed its way to the top of the charts. Leader Board Tournament is quite simply more of the same sold at a realistic price.

If you enjoyed the original then you'll enjoy these extra courses. If you haven't played Leader Board then you should get that, then buy this.

Touchline

Name: Leader Board Tournament. Company: US Gold/Access, Units 2/3, Holford Way, Holford, Birmingham, B6 7AX. Price: £4.95. Machine: C64.

Originality: 3/10. Graphics: 7/10. Playability: 10/10. Value: 8/10.

FIVE STAR GAMES

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Five star games for the price of one is the claim of the latest collection from compilation kings, Beau Jolly.

Spindizzy, Batalyx, Zoids, Scarabaeus and Equinox form the impressive line up of hits.

Spindizzy was arguably the pick of the Marble games that swamped the market before the ink on the official license dried.

The game features either a top, marble or gyroscope exploring a 3D landscape of slopes, ledges and lifting platforms while collecting diamonds for invaluable bonus seconds.

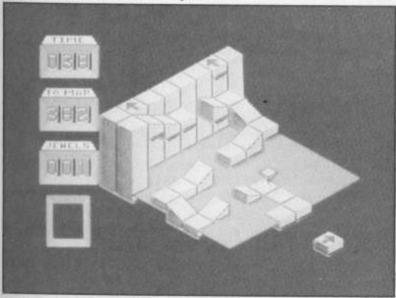
With over 385 screens to explore and solve it is unlikely that anyone will ever finish the game.

The same might also be true of Martech's excellent game based on the Zoids battle robots.

Merged with only a meagre Tank Zoid you must search the Red Zoid cities for the eight pieces that once were the mighty Zoidzilla. Find all eight and you'll be in a one to one battle with the Redhorn the Terrible but before then you must learn to control the Zoid you're merged with and then how to destroy the cities while fighting the red zoid patrols!

Icon controls monitor your Zoid's state of health as well as the position of enemy Zoids and the control and flight of your missiles.

Minter fans will revel in the inclusion of Batalyx which was a collection of Minter mayhem tacked together as subgames and distributed by Ariolasoft.



This is probably his worst game but my favourite is still Attack of the Mutant Camels.

Mikro-Gen's Equinox requires a curious mixture of arcade skills and strategic thought if you are to clear the radioactive canisters from the mining complex before they explode.

To have any chance of success you must master the use of teleporter terminals, trans level transporters, credit dispensers and magnetic lifts while fighting off the constant barrage of energy draining aliens.

Superb graphics add to the incredible atmosphere of this game that drives you back for more despite dismal scores.

Finally the collection is completed by Ariolasoft's arcade adventure, Scarabaeus.

This exploration, 3D maze game challenges you to find nine heiroglyphs and use them to sought potions from poisons, solve the pharoah's puzzle to find the key that will lead you into the tomb.

A puzzle solving game that is heiroglyphics to me. Individually these five games have each attracted its own cult following. Together they make a winning combination.

T.H.

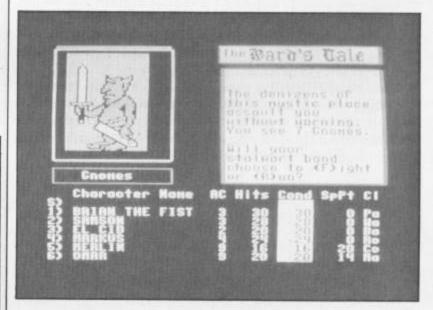
Touchline

Name: Five Star Games. Company: Beau Jolly. Price: £10.95. Machine: C64.

Originality: 1/10. Graphics: 9/10. Playability: 8/10. Value: 10/10.

BARD'S TALE

kara Brae as a pleasant, sleepy little town. Or at least it was until Mangar arrived. An evil magician, he cast a spell of Eternal Winter over the town, thus effectively isolating it



from the outside world. The last living things to enter were Mangar's specially invited guests – evil creatures of the night and foul monsters. It wasn't long before the town's militia disappeared leaving Skara Brae even more so under the evil mage's control. Only a few dared to talk of resistance. untried warriors and conjurers. Petty thieves already on the run and bards who would sing of the olden days for anyone who would buy them a tankdard of frothing ale.

For some reason or other, these rebel leaders look up to you as their leader. You must assemble a party of no more than six characters to go out and try to defeat Mangar. Of course, it is not going to be that easy. There will be his minions to defeat first and you will have to gain access to parts of the city not normally available to you. And then of course, there are the dungeons. So the bard sings, for no-one has ever found the entrance and lived to tell the tale.

You start off in the Adventurer's Guild, a safe haven, one of the few left in the city. Here you can assemble a part to your liking. Your choice is considerable. Seven races including dwarves, elves and gnomes. There are also 10 character classes (although not all are available at the start). Each character has five different attributes – strength, intelligence, dexterity, constitution and luck. Different classes and races

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are higher in some attributes than others. It is no use having a clumsy rogue for example who can't tie his bootlaces let alone disable traps. One characteristic to look out for when generating a new character though is the number of hit points he or she has. This is an indication of the amount of damage a person can take before dying. If a character only has a few HPs, take a tip and roll the dice again.

Although your party has gold, it has no equipment so the first journey is to Garth's. An adventurer from years gone by, he has all the latest swords and armour. Gold can be pooled within the part to buy those really expensive goods. Garth will also identify unusual items for you – for a fee of course.

Magic plays an important part in the game. There are four different types of spell caster available, each with their own set of spells available – conjurers, magic users, sorcerors and wizards although you need to be a fairly experienced spell caster before you can become one of the latter two types. Bards are used to inspire the rest of the party by singing one of their songs They are reasonable fighters too but you will need to top them up with ale fairly frequently.

The display is in three main sections. Top left is a 3D picture of your surroundings or an illustration of your character or enemy. Top right is the description box – what you can see and what your choice are (all menu driven) and at the bottom of the screen is a quick run down on the status of your party. Movement is straightforward. Turn left, turn right, straight on or kick a door down!

The Bard's Tale is a superb role-playing game that will keep fans of this genre happy for months. That it is also the first of intended series is also good news. Despite the slowness of all the disk accessing (thanks Commodore) the game is excellent value for money.

G.R.H.

Touchline

Title: The Bard's Tale. Supplier: Ariolasoft, 68 Long Acre, London WC2E 9JH. Tel: 01 836 3411. Price: £14.95. Machine: C64.

Originality: 8/10. Graphics: 8/10. Playability: 7/10. Value: 9/10.

PSYCASTRIA

This is the latest in a long line of clones that have tried to ride on the back of the phenomenal success of Hewson's Uridium.

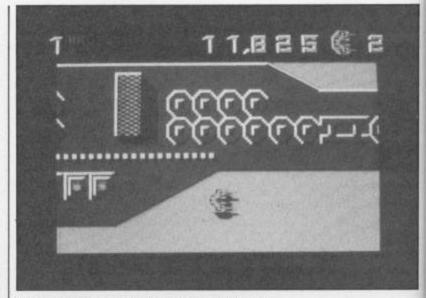
Once again you're flying a single fighter armed with twin firing lasers.

Once again you must brave the hordes of enemy fighters to take out land/ship installations to win the day.

Except in this game the fighters attack you in frightening hordes of one!

They do fire missiles so you still have to take them seriously but a greater threat is the raised barriers and walls that you can crash into.

Up to four players can share the "excitement" of it all and even marvel at the speech that says "tough luck sucker" at the end of every game. This rapidly becomes extremely annoying but can be turned off. So can the game unless you



like your games dull and unoriginal.

Later levels drift away from the designer Dreadnought look (Uridium style) with barriers forming for you to thread your way through. I don't think anyone will bother. If you want to play a Uridium style game then why not play Uridium or Firebird's Warhawk (a clone but at a budget price). This has nothing new to offer.

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Touchline

Name: Psycastria. Company: Audiogenic, 33 Suttons Industrial Park, London Road, Reading RG6 1AZ. Price: £7.95. Machine: C64.

Originality: 2/10. Graphics: 6/10. Playability: 5/10. Value: 4/10.

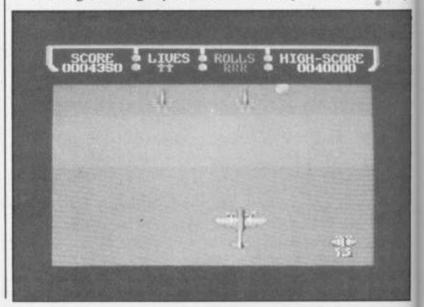
1942

It's 1942 and war in the pacific is raging.

You must fly your lone fighter on a daring solo mission to destroy the enemy's fleet and airforce in Elite's latest coinop conversion.

Accompanied only by the wrong muic (633 Squadron hardly ever fought in the Pacific) you must blast your way through from carrier to carrier in 24 daring combat stages.

During each flight you are assaulted by hordes of enemy



fighters flying at you in battle formation.

Each individual formation is quite easy to take out but the problems add up when you're swamped with three or four formations each swirling around you in different patterns. Particularly nasty ones suddenly appear behind you or dive in from the side.

Occasionally the enemy fighters are joined by bombers that take several shots to destroy and fire a hail of bullets at you from the rear gunner.

At the end of each stage the next carrier appears and a bonus is awarded depending on your kill percentage.

In later stages the skies are packed with enemy bombers and fighters all trying to blast you.

Luckily, help is at hand in the mysterious POW capsules that are dropped. Collecting these gives your plane added features such as an increase in firepower and just might get you through to the next carrier.

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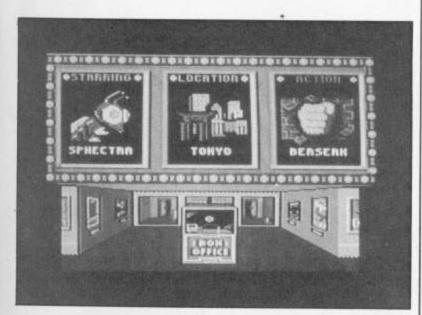
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Name: 1942. Company: Elite, 55B Bradford Street, Walsal WS1 3QD. Tel: 0922 55852. Price: £9.95 Machine: C64. Originality: 3/10. Graphics: 8/10. Playability: 9/10. Value: 8/10.

THE MOVIE MONSTER GAME

Three years ago, Epyx released an excellent game of monstrous proportions for the Atari called Crush, Crumble and Chomp.

In the game you played a choice of monster from giant wasp to Godzilla who beat the hell out of the city of your choice.



Now the game has been revamped for the C64 and called the Movie Monster Game.

Now you can play Godzilla, a giant Meringe, Spectra the giant wasp. Tarantus a massive tarantula, a robot called Mechnatron or a blob called the Glog in a variety of movies where your chosen monstrosity tries to eat/escape from/destroy/generally give a bad time to one of the six major cities.

Naturally the loyal army and airforce are called out to stop whatever's stomping their city. Each monster is unique in its strengths and weaknesses, some even have special weapons.

Godzilla is big, very big and can breathe fire. However he is also very slow whereas spectra is faster but a lot weaker, mechanatron fires lasers, Mr Meringue spits globe of goo, Glog dissolves everything in its acid and Tarantus traps tanks in its web.

Despite such potential the game has a power stronger than all the monsters it contains, it bores its players.

Once you've selected your critter and his task and you've read the all purpose introduction your monster crawls around the city at snail pace on a poorly scrolling screen. Stomped buildings don't shatter forming interesting piles of rubble instead they collapse totally leaving not a single brick!

Pedestrians wander aimlessly, seemingly unaware of the giant looming above them, and the airforce quite happily bomb you yet don't even mark the cities paint work!

Speed up the action and add some decent graphic effects and it could have been as good as the three year old original! It isn't and is Epyx's first UK monster flop!

Touchline

Name: The Movie Monster Game. Company: US Gold/Epyx, Units 2/3 Holford Way, Holford, Birmingham B6 7AX. Tel: 021 356 3388. Price: £9.99. Machine: C64.

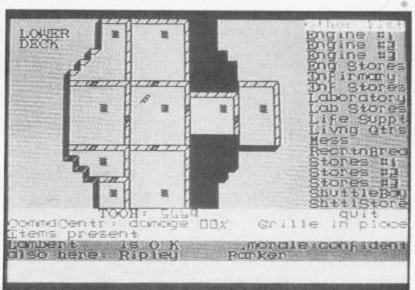
Originality: 2/10. Playability: 4/10. Graphics: 5/10. Value: 6/10.

ALIEN

For those of you who missed it the first time around, Bug Byte has re-released the game of the film, Alien, at a budget price of £2.99. Having missed it myself I was looking forward to showing the alien just who was boss.

The aim of your mission is either to totally destroy the alien or else drive it out of the spacecraft Nostromo. To escape you can leave the ship in the escape pod Narcissus with at least three other crew members and set the ship's self destruct mechanism to auto.

The game supports what is generally termed as Personality Control System - PCS. This means that as Commander, you have to be able to read and understand the



personalities of each of your crew. For example, if one of the crew suffers from claustrophobia, you couldn't send that person into a narrow air duct. Likewise, if one of them is feeling slightly cowardly, you don't send them to attack the Alien. To aid you in this you are provided with a rundown of each of the crew members strong and weak points. Beware though, these traits can alter as the game progresses, depending upon the situation at the time.

Control is by use of a joystick and a few keys. You may view all the decks of the Nostromo via a deck plan. This will show where grills, stairs and doorways are. The command monitor gives you all your options. From the command monitor you manipulate each crew member, use items which you have acquired and examine damage reports. One thing to watch for is TOOH (Time out of Hypesleep). If a crew

member's TOOH falls to zero then they die.

I must confess that I did not do particularly well at this game. I found that the game play takes some getting used to. A map must be kept of where each crew member is and progress made. Otherwise you will get totally lost. All in all, noit a bad game. The graphics are nothing to write home about and the sound, although functional is nothing special (except the nice intro).

Shoot 'em up and platform game players will not, I fear, get on with this game. However, strategists amongst you will find there is plenty here to keep you occupied for many an

hour.

P.E.

Touchline

Title: Alien. Company: Bug Byte, Victory House, Leicester Place, London WC2H 7NB. Tel: 01 439 0666. Machine: C64. Price: £2.99.

Originality: 6/10. Playability: 6/10. Graphics: 4/10. Value: 8/10

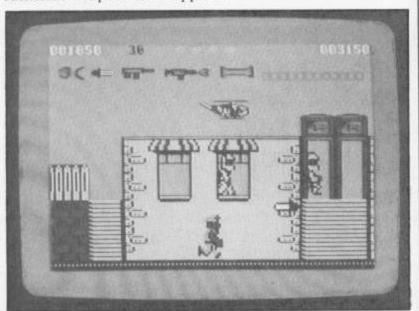
BAZOOKA BILL

General MacArthur has been kidnapped and is being held by revolutionary forces on an island in the Pacific.

You are Bazooka Bill, soldier of fortune, and it's your

job to get him back.

Although unarmed you set off hoping you'll find sufficient weapons and supplies to survive the mission.



Waiting to stop you are hordes of heavily armed soldiers as well as tanks, planes and helicopters.

The game plays like a mixture of Green Beret and Commando, as Bill charges along a two level scrolling screen punching anything in his way.

Occasionally he will find a knife, flame thrower, machine gun or even a bazooka to help him in his carnage but most of the time you'll have to rely on your deadly self-loading fists.

The screens can be a little confusing as, if you think you're running along the bottom level you may in fact be simply running around the same building. Therefore you must keep an eye on the background and if you see anything familiar simply leap up to the next level to get out of the rut.

This "feature" is obviously included as the bottom level is less dangerous than the upper level which is packed with

machine gunning troops.

If you reach the airport you can steal a plane and blast

your way through incredibly crowded skies.

You begin the game with five lives and can gain more by killing the enemy by the ton (100 corpses and you get a new life).

The action is fast, furious and a lot of fun accompanied by some boppy music to stir you on to heroic deeds and

another game.

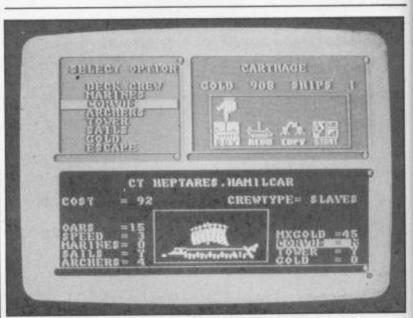
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Touchline

Name: Bazooka Bill. Company: Melbourne House, 60 High Street, Hampton Wick, Kingston-upon-Thames, Surrey KT1 4DB. Machine: C64. Price: £9.95.

Originality: 4/10. Graphics: 7/10. Playability: 9/10. Value: 8/10.



LEGIONS OF DEATH

The Punic Wars between the Roman and Carthaginian empires lasted for over 120 years. Carthage, on the North African coast, had established its empire through trading and the might of its navy. Rome depended more on the power of its army. That the Romans negated the naval powers of their enemy is now a matter of history, but here is your chance to see if things would have been different if you had been in command over two thousand years ago.

Legions of Death is a fully icon driven wargame and Lothlorien's most impressive result to date. Set in the central Mediterranean, you take the side of the Carthaginians against either the computer or another human opponent as you struggle for mastery of the seas.

Before the game starts, you must first equip your navy. Do you go for lots of fast manoeuvrable ships which are lightly armed or better specified but slower models. And how do you equip them? Should you use slaves to row the boats or hire expert oarsmen? How many marines or archers should you carry and have you left enough room to carry gold back from the tributes paid by friendly cities to your capital. This theme of spending your money wisely is crucial throughout the game.

The display is divided into four main boxes. On the left is a large map. This can be either a general map of the area or a close up of a specific area when issuing orders. The box in the top right hand corner contains icons of the commands currently available to you while underneath is either another close up map or a picture of the ship currently selected. An information box is at the bottom of the screen.

Commanding your forces is controlled entirely by selecting the appropriate icon. Some of these lead you into sub-menus and the same icon has several different meanings according to where it occurs. A flow chart of the various permutations is included in the documentation. It is rather daunting at first but you soon get the hang of things.

Prepare to be well and truly beaten the first few times that you play. Not only do you get the chance to set your own victory conditions (there are default values) but also the initial disposition of your forces and it takes some time to get used to the optimum strategy. Once you have that sorted out, all you have to do is set courses and speeds for your ships, rebuild and repair them, collect your tributes, destroy the enemy fleet and generally become master of the Ancient World. Just don't tell the galley slaves that you want to go water skiing after a quick row to Rome and back.

Legions of Death is a very well presented wargame. A lot of thought has gone into the gameplay, and it shows. The amount of detail and available options are excellent and the displays are large and legible. Highly recommended to all wargamers and anyone else who wants to act out their Latin lessons.

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Title: Legions of Death. Supplier: Lothlorien, APS, Victory House, Leicester Place, London WC2H 7NB. Tel: 01 439-0666. Machine: C64. Price: £9.95.

Originality: 9/10. Graphics: 8/10. Playability: 7/10. Value: 8/10.

NUCLEAR EMBARGO

By the middle of the 21st century, the Earth was totally dependant on nuclear fuel for all its energy supplies. Its own resources having long since been used up, a trade agreement was struck with Saturn. We would give them the technology and they would give us the Uranium – their moons were full of the stuff. All went well until Rayol the perverse ruled Saturn. He decided that he wanted payment in human flesh

for his zoo, something that the powers that be naturally refused. As the situation was becoming desperate, the crisis



committee decided to launch a raid on Saturn's moon in order to liberate the Uranium supplies necessary. You are the pilot on that mission.

On first loading, I though that this was going to be another Star Trek variant as I was presented with a 10 by 10 stellar map depicting the position of the various moons. Fortunately, this proved not to be the case and the rest of the game is highly original. Your first task is to select a plant to warp to. Preferably one with zero gravity. The view now shifts to a close up of the moon surface. This you must explore using your X-ray detector in order to find the location of the Uranium. Spy satellites try to pick up your trail. If they are successful, then the ground forces open fire on you and must be eliminated.

You can now switch to the transporter room. You have nine droids at your disposal and must attempt to teleport one on to the surface of the moon. This involves manipulating energy and beam levels while at the same time, making sure that the droid does not overheat. The lower the gravity of the moon, the easier it is to accomplish the transfer.

Once on the moon, you have remote control over the droid as it explores the surface looking for Uranium dumps. Look out though for the laser batteries that will try to destroy the droid. There are also computer rooms to be sought out. A mini mastermind game allows you to temporarily disable the defences. Once you have stocked up, its a case of beaming back up to the ship and on to the next moon. Extra energy can be picked up by visiting and blasting a pulsar.

Nuclear embargo is really a collection of mini games but they work well when viewed as a whole and the result is both original and fun to play.

G.R.H.

Touchline

Title: Nuclear Embargo. Supplier: Micropool, 4 Mercury House, Aldermaston, Berks RG7 4QW. Tel: 07356 77486. Machine: C64. Price: £12.95 disk.

Originality: 7/10. Graphics: 8/10. Playability: 8/10. Value: 7/10.

Listings

Get it right first time with our deluxe program system for the C64.

ou may have noticed that our listings are free of those horrible little black blobs which send you searching around the keyboard for a suitable graphic symbol. You may also have noticed the funny numbers by the side of each line of the listing. Fret no more, it's all part of our easy entry aid.

Instead of those nasty graphics and rows of countless spaces in PRINT statements and strings we use a special coding system. The code, or mnemonic, is always contained in square brackets and you'll soon learn to decipher their meanings.

For example, [SA] would mean type in a Shifted A, or an ace of spades in layman's terms, and [SA10] would mean a row of ten of these symbols.

[S+2] means hold down the shift key and press the plus key twice. It doesn't take a great leap of logic to realise that [C+2] means exactly the same thing except that the Commodore key (bottom left of the keyboard) is held down instead of the shift key.

If more than two spaces appear in a statement then this will be printed as [SPC4] or, exceptionally, [SSPC4]. Translated into English this means press the spacebar four times or in the latter case hold the shift key down while you do it.

A string of special characters could appear as:

[CTRL N, DOWN2, LEFT5, BLUE,

This would be achieved by holding

down the CTRL key as you press N, press the cursor key down twice, the cursor left key five times, press the key marked BLUE while holding down the CTRL key, press the F3 key and, finally hold the Commodore key down while pressing the number two key (C2) would of course make the computer print in brown).

Always remember that you should only have a row of graphics characters on your screen with no square brackets and no commas, unless something like this appears:

[SS],[C*]

In this case the two characters should have a comma between them.

On rare occasions [REV T] will appear in a listing. This is a delete symbol and is created by entering the line up to this mnemonic. Then type a closing quotation mark (SHIFT & 2) and delete it. This gets the computer out of quotes mode. Hold down CTRL and press the number nine key (RVSON), type the relevant number of reversed T's and then hold down CTRL and press zero (RVSOFF). Next type another quotation mark and delete it again. Now finish the line and press RETURN.

A list of these special cases is given in the table but remember that only one of these mnemonics will appear outside of a PRINT string: the symbol for pi. This may appear when its value is needed in a calculation so this may look something like:

:CC=2*[PI]*R:

Ignore the square brackets and just type in a shifted upward pointing arrow (ie. the pi symbol).

PROGRAM: SYNTAX CHECKER

5 REM SYTAX CHECKER - ERIC DOYLE

10 BL=10 :LN=70 :SA=49152 20 FOR L=0 TO BL:CX=0:FOR D=0 TO

30 READ A: IF A>255THENPRINT"NUMB ER TO LARGE";LN+(L*10):STOP 40 CX=CX+A:POKE SA+L*16+D,A:NEXT

50 READ A: IF A><CX THENPRINT"ERR

OR IN LINE";LN+(L*10):STOP 50 NEXT L:SYS 49152:NEW 70 DATA 173,5,3,201,165,208,31,1 20,169,9,141,32,208,141,33,208,1

80 DATA 169,7,141,134,2,169,13,3 2,210,255,169,64,141,4,3,169,168 90 DATA 192,141,5,3,88,96,120,16 9,124,141,4,3,169,165,141,5,1566

100 DATA 3,169,14,141,134,2,14f, 32,208,169,6,141,33,208,86,96,96

110 DATA 32,124,165,72,138,72,15 2,72,162,0,165,20,133,254,165,21 ,1747

120 DATA 24,101,254,133,254,189, 0,2,240,18,69,254,133,254,232,18

130 DATA 0,2,240,8,24,101,254,13 3,254,232,208,233,169,1,141,134,

140 DATA 2,165,254,74,74,74,74,3 2,158,192,32,210,255,165,254,41,

150 DATA 15,32,156,192,32,210,25 5,169,13,32,210,255,169,13,32,21 0,1995

160 DATA 255,169,7,141,134,2,104,168,104,170,104,96,24,105,48,20 1,1832 170 DATA 58,16,1,96,24,105,7,86, 0,0,0,0,0,0,0,403

by Eric Doyle

Checksum Program

The hexadecimal numbers appearing in a column to the left of the listing should not be typed in with the program. These are merely checksum values and are there to help you get each line right. Don't worry if you don't understand the hexadecimal system, as long as you can compare two characters on the screen with the corresponding two characters in the magazine you can use our line checking program.

Type in the Checksum Program, make sure that you've not made any mistakes and save it to tape or disk

just

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immediately because it will be used with most of the present and future listings appearing in Your Commodore.

At the start of each programming session, load Checksum and run it. The screen will turn brown with yellow characters and each time you type in a line and press the RETURN key a number will appear on the screen in white. This should be the same as the corresponding value in the magazine.

If the two values don't relate to one another, you have not copied the line exactly as printed so go back and check each character carefully. When you find the error simply correct it and press RETURN again.

If you want to turn off the checker simply type SYS49152 and the screen will return to the familiar blue colours. You can then do whatever it was you wanted to do and if this doesn't use the area where Checksum lies you can go back to it with the same SYS command.

No system is foolproof but the chances of two errors cancelling one another out are so remote that we believe our listings are more reliable than any other magazine in the world. So get typing!

Mnemonic	Symbol	Keypress
[RIGHT]		CRSR left/right
[LEFT]		SHIFT & CRSR left/right
[DOWN]		CRSR up/down
[UP]	Q	SHIFT & CRSR up/down
[F1]		fl key
[F2]		SHIFT & fl key
[F3]		f3 key
[F4]	T.	SHIFT & f3 key
[F5]		f5 key
[F6]		SHIFT & f5 key
[F7]		f7 key
[F8]		SHIFT & f7 key
[HOME]	5	CLR/HOME
[CLR]	-	SHIFT & CLR/HOME
[RVSON]	R	CTRL & 9
[RVSOFF]		CTRL & 0

Mnemonic	Symbol	Keypress	
[BLACK]		CTRL & 1	
[WHITE]	E	CTRL & 2	
[RED]	E	CTRL & 3	
[CYAN]		CTRL & 4	
[PURPLE]		CTRL & 5	
[GREEN]		CTRL & 6	
[BLUE]		CTRL & 7	
[YELLOW]	-	CTRL & 8	
[POUND]		£	
[LARROW]		4	
[UPARROW]		1	
[P1]		SHIFT & ↑	
[INST]		SHIFT & INST/DEL	
[REV T]		see text	
[Cletter]		CBM + letter	
[Sletter]		SHIFT + letter	

Hex Data Entry

Introducing the Your Commodore Hex Data Entry Program to make our listings even more accessible.

By M.C. Stretton assisted by P.A. Eves

he Your Commodore Hex Data Entry program has been written with you, the reader in mind. No longer will it be a painstaking ordeal, typing in all the long lists of data. This program will ensure a 100% correct entry, each and every time you use it.

I have made this version as streamlined as possible so as to save you having to type in a large program. There are only four options in this version: LOAD DATA; SAVE DATA; ENTER DATA; PRINT DATA. There will be a much larger version coming shortly which will give lost more options and will have Windows, Redefined Chars, Scrolling Text etc.

On first entering the Hex Data Entry, only the LOAD DATA and DATA ENTRY options are available to you. This is because the buffer is empty, and the other two options require data to be present. On selecting the LOAD DATA option, you are asked for TAPE or DISK. Press either 'T' or 'O' then RETURN. The program remembers that last input/output, and so it is possible to just hit RETURN if the correct device type is being displayed. You are then required to enter a filename.

Tape users please note, to cut down on errors for disk users, you will not be allowed to enter a blank filename. Filenames can be a combination of any characters, except graphics, up to 16 in number. If you should make an error in your filename entry, you may either delete single characters by the DEL key, or SHIFT/CLRHOME delete the whole filename. extremely careful when typing in your filename, errors can be fatal, so make sure you only use filenames that are stored on whatever device you are using. After the prompt, hit return and the file will be loaded into the buffer. The program will allow files up to 95 blocks in length to be loaded in. If you want larger programs entered, you will have to split them into two or more parts first. After the load, control is passes back to the main menu.

The save option is identical to the load, except that it takes the contents of the buffer and saves them out to the given start address. This will save an executable file, that can be loaded and

run, independant of the Input program.

Data Entry

The Data Entry option is the option by which you can enter data from Your Commodore, or your own creations. Once this option is selected you are asked if you want to continue from the given address. If you have just 'LOADed' a file, this address will be the next available byte in the buffer. (Allowing you to add more data to the end of the loaded file). This is also true of the program currently in memory. Therefore if you wish to continue typing in at the last address, type 'Y'. If 'N' is pressed the program assumes you are starting a fresh entry. When this happens the buffer is reset to zero, thus losing any program currently in memory. (I have chosen \$C000 as the normal start up address purely because most M/C progs reside here.) After pressing 'N', you are then asked for the starting address, in Hex. Any valid Hex number is acceptable, e.g. \$400, \$C00, \$0400. In this example, the first figure, \$400, would be interpreted as \$0400 by the program. Likewise \$286 is taken to be \$0286.

Once the start address is given, you are asked if you want checksums or not. If you are typing in a program from Your Commodore your response will be 'Y'. If you are entering your own program then select 'N'.

The screen display now changes to show the current address being poked into. Type any valid Hex number and the program automatically skips the next byte without the need to type commas, spaces or returns. If you make a mistake, one press of the DEL key will erase the whole number. If in the no checksum mode, when you get to the end of the line, the line will automatically scroll up ready for your next input.

If in checksum mode, after eight bytes are entered you must type the two digit checksum at the end of the line. Unlike the no checksum mode you now press return to enter the line.

If the program finds that the checksum does not match the line entered, a warning tone will be sound. You will then be asked if you wish to either: a) Re-enter the line or b) Re-enter the checksum.

After checking your line, if you find you have entered it wrongly, then press 'L'. The line will be erased and you then re-enter it correctly. If you find that you have only made a mistake in typing in the checksum, then press 'C' and re-enter it. Should you wish to stop entering data, simply press return or space bar on a blank line to get you back of the main menu. Here you may save your program so as to restart another day, or you may wish to see a printout.

On choosing the print option, you have a choice or hard copy or screen copu. The listing can be paused at any time by pressing down and holding down any key. Pressing the RUN/STOP key and holding it down will breat out of the print mode and return you to the main menu.

The left arrow key 'top left of the keyboard', acts as zero when typing in your data. The space bar acts as the return key when entering dats, thus leaving you free from searching for the return key.

The load option allows any program, less than 95 blocks, to be loaded into the buffer, so it is possible to load a basic program, obtain a Hex dump, then resave the program out to another tape or disk without harming it in any way.

I hope that this program will help to take the drudgery out of typing in long lists of date statements.

Please use SYNTAX CHECKER when entering this program READY. EC 10 REM ----- SETUP --20 POKE788,52:CLR 30 DU-8: BU-16384: POKE650, 128 : POKE53280, 12: POKE53281, 12: P OKEG46, 1: PRINT"CCLR, REU H, RE 40 CAS-"SC000": CA-49152: SA-C A: TT=0 CB 50 GOSUB2180 55 PRINT"[CLR]"; -- OPTIONS ØD 70 PRINT"[HOME, RUSOFF, BLACK, C6401" 80 PRINT"[RUSON, BLACK] YOUR COMMODORE HEX INPUTTER - (C) 90 PRINT"[RUSON] -DESIGNED A

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NO WRITTEN BY M C STRETTON-[RUSOFF]' 95 PRINT"[RUSON, SPC10]ASSIST 82 ED BY P A EVESCSPC10, RUSOFF] 18 100 PRINT"[WHITE, DOWNS, RIGHT 13)[F1] LOAD DATA" 110 PRINT"[DOWN2, RIGHT13][F3 58 J SAVE DATA" EB 120 PRINT"CDOWNZ, RIGHT13JCFS AD DATA ENTRY" 130 PRINT"EDOWNE, RIGHT13JEF7 A0 PRINTER" 140 GOSUB1250 150 ONFKGDSUB1650,1770,180,8 BF 160 GOTO70 170 REM ----- HEX INP BC D7 180 GOSUB1970 190 PRINT"CHOME, DOWN, BLACK, R 93 USONICONTINUE FROMESPEST, UP, 14 RIGHT141"; CAS 200 POKE198, 0: WAIT198, 1: GETA 210 IFAS-"N"THENBU-16384: GOT D7 0240 220 IFAS "Y"THENPRINT"[WHITE F9 3";:GOTO260 230 GOTO200 240 PRINT"CHOME, DOWN, BLACK, R USONJOATA ADDRESS: \$....CSPC 21, UP, RIGHT153" 250 GOSUB1320: PRINT"CWHITE, R USDFF1"; : HHS-INS: GOSUB1190:S C6 A-DE: CA-DE: CAS-HHS 260 PRINT"CHOME, DOWN, BLACK, R USON, SPC43DO YOU WISH TO ENT ER CHECKSUMS?CSPCS, RUSOFF]"; 16 270 POKE198,0: WAIT198,1: GETA BB 280 IFAS="N"THENZZ=1:GOTO310 290 IFAS="Y"THENZZ=0:GOTO310 CE 300 GOTO270 310 PRINT"[CLR, WHITE]"; 30 87 AE 320 SYSS9626 数田 321 II-Ø 68 325 GOSUB580 330 B-SA: KA-SA: INS-"" 61 SE 40 340 GOSUB1250 C3 BA 350 L=LEN(INS) 360 IFAS=CHR\$(20)THENGOSUBS3 0:50T0340 370 IFAS-CHR\$(13)ANDIN-0THEN 72 PRINT"CCLR3": RETURN 380 IFAS=CHRS(32)ANDIN=0THEN 80 PRINT"CCLR)": RETURN 390 IFAS=" -"THENAS="0": GOTO4 D2 400 Y-0: IFASC(AS)>47ANDASC(A 60 \$) <58THENY=1 1B 410 IFASC(AS)>64ANDASC(AS)<7 1THENY=1 420 IFY-0THEN340 430 PRINTAS;:DN-DN+1:IFDN-2I 28 HENPRINT" ";:GOTO450 38 37 18 0440 INS-INS+AS:GOTO340 50 450 INS-INS+AS 1E 460 HHS-INS: GDSUB1190 470 POKE BU, DE: CA=CA+1: BU=BU C9 +1: DN=0: TN=TN+1: INS="" 62 480 IFTN-BANDZZ-1THENGOTO320 490 IFTN-BANDZZ-OTHENPRINT"[A3 RIGHT31"::GOSUB720:GOSUB640

500 IFTN-BANDCHS-CKSTHENGOTO ØE

510 IFTN=BANDCH\$<>CK\$THENGOS 99 890 IFK\$="S"THENNU=3:GOTO940 UB2040: GOTO525 520 GOTO340 43 525 DNDQGGTO529,526 526 PRINT"CHOME, WHITE, DOWN24, RIGHT373"; 527 PRINT"..CLEFTS3"; 528 GOTO490 529 BU-BU-8: CA-CA-8: GOTO325 530 IFIN-@THENGOSUB550: RETUR 540 IFDN=@THENPRINT"CLEFT3]. [LEFT2]";:TN=TN-1:BU=BU-1:C A=CA-1:INS="":RETURN 550 IFL-> 1THENINS-LEFTS(INS, L-1):PRINT"CLEFT].CLEFT]";:D 65 N-DN-1 560 RETURN 570 REM ----- NEWLINE 580 IFBU< 40951THEN585 581 GOSUB2560: PRINT"CHOME, DO WN, RUSON] WARNING: BUFFER ALM OST FULL-8 BYTES LEFT(WHITE) 582 FORA=1T04000:NEXT:GOSUB2 150 585 DE=CA: GOSUB1110: CAS=LEFT 38 \$("50000",5-LEN(HH\$))+HH\$
590 PRINT"CHOME,DOWN24,RIGHT WHITE]"; CAS; "CSPC4].. 600 IFZZ-ØTHENPRINT" 610 PRINT"CHOME, DOWN24, RIGHT 103"; :TN=0:DN=0:INS="":RETUR 620 REM ---- CHEXUM ---640 CH=0 650 IFCA=SATHENRETURN 660 FORX-1TOB: CH-CH+(X*(PEEK TX3N:(((X+(E-UB)) 665 CH=CH+CA-6 570 CH-CH-INT(CH/256)*256:DE =CH: GOSUB1110: CHS=MIDS(HHS, 3 680 IFCHS > CKSTHENTI=1 690 RETURN 710 REM ----- GETCHECK 720 POKE198, 0: CK5="" 730 GETLS: IFLS-""THEN730 88 740 L=LEN(CK\$): IFL\$=CHR\$(20) ANDL> ØTHEN760 750 GOTO770 760 CKS=LEFTS(CKS,L-1): PRINT "CLEFTJ.CLEFTJ";:GOTO730 770 IFLS-CHRS(13)ANDL-2THENC K-VAL(CKS): RETURN 780 IFLS-" "ANDL-2THENCK-VAL CCKS): RETURN 790 IFLS="+"THENLS="0" 800 Y-0: IFASC(LS)>47ANDASC(L S) < SBTHENY=1 810 IFASC(L\$)>64ANDASC(L\$)<7 AC 1THENY=1 820 IFY-0DRL-2THEN730 830 PRINTLS; 90 840 CKS=CKS+L5:GOT0730 850 REM ----- PRINTER -F2 PA 860 IFCA-SATHENRETURN 95 870 GOSUB1970: PRINT"CHOME, DO WN, RUSON, BLACK, SPC63PRINT TO SCREEN OR PRINTER?[SPC73" 51 AD EØ 880 POKE198,0: WAIT198,1: GETK DA

900 IFKS-"P"THENNU-4 910 IFKS->"S"ANDKS-"P"THENB

920 PRINT"CHOME, DOWN, BLACK, R

VSON) SWITCH ON PRINTER THE N PRESS RETURNESPESS"

930 POKE198, 0: WAIT198, 1: GETA

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1380 FILS=CHRS(13)ANDL)0THEN RETURN RETURN 1430 FILS=CHRS(13)Y47ANDA 1500 FIRSEC(LS)>97ANDA 1500 FIRSCC(LS)>97ANDA 1500 FIRSCC(LS)>97ANDA 1500 FIRSCC(LS)>9	,173,63,3,237,61 3,64,3,237,62,3, 8,101,193,133,17 3,175,32,162,245 ,3,96,32,183,247 3,193,169,64,133 ,3,237,61,3,170, 237,62,3,168,24, 3,133,174,152,10 5,124,246,96,169,
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## 1370 INS-LEFTS(INS,L-1):PIN D 1380 FILS-CHRS(3):ANDLYOTHEN RETURN 1395 FILS-CHRS(32):ANDLYOTHEN RETURN 1396 FILS-CHRS(32):ANDLYOTHEN RETURN 1396 FILS-CHRS(32):ANDLYOTHEN RETURN 1390 FILS-CHRS(32):ANDLYOTHEN RETURN 1390 FILS-CHRS(32):ANDLYOTHEN RETURN 1390 FILS-CHRS(32):ANDLYOTHEN RETURN 1400 FIRS-CLS):FANDASCLLS) 1400 FIRS-CLS):FANDASCLLS) 1410 FIRS-CHRS(32):FANDASCLLS) 1410 FIRS-CHRS(32):FANDASCLLS 1410 FIRS-CHRS(32):FANDASCLLS 1410 FIRS-CHRS(32):FANDASCLLS 1410 FIRS-CHRS(32):FANDASCLLS 1410 FIRS-CHRS(32):FANDASCLLS 1410 FIRS-CHRS(32):FANDASCLLS 141	,173,63,3,237,61 3,64,3,237,62,3, 8,101,193,133,17 3,175,32,162,245 ,3,96,32,183,247 3,193,169,64,133 ,3,237,61,3,170, 237,62,3,168,24, 3,133,174,152,10 5,124,246,96,169,
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1380 FILS=CLRS(13)ANDLYOTHEN Page Pa	8,101,193,133,17 9,175,32,162,245 ,3,96,32,183,247 3,193,169,64,133 ,3,237,61,3,170, 237,62,3,168,24, 3,133,174,152,10 5,124,246,96,169,
## STURM 1395 FILS-CHR\$(32) ANDL>0THEN 197 1396 FILS-CHR\$(32) ANDL>0THEN 197 1396 FILS-CHR\$(32) ANDL>0THEN 197 1396 FILSC(15) > GYANDASC(15) < 7 1396 FILSC(15) > GYANDASC(15) < 7 1396 FILSC(15) > GYANDASC(15) < 7 1397 FILSC(15) > GYANDASC(15) < 7 1397 FILSC(15) > GYANDASC(15) < 7 1398 FILSC(15) > GYANDASC(15) < 7 1398 HY0 FILSC(15) > GYANDASC(15) < 7 1398 HY0 FILSC(15) > GYANDASC(15) < 7 1490 FILSC(15) > GYANDASC(15) < 7 1590 FILSC(15) > GYANDASC(15) > GYANDASC(15) < 7 1590 FILSC(15) > GYANDASC(15) > GYA	8,101,193,133,17 9,175,32,162,245 ,3,96,32,183,247 3,193,169,64,133 ,3,237,61,3,170, 237,62,3,168,24, 3,133,174,152,10 5,124,246,96,169,
## 1870 PINT THOME, DOWN, BLACK, PUSON PLACE DISK INTO DRIVE THEN HIT RETURN (CS)" 11 PLACE PLACE PLACE DISK INTO DRIVE THEN HIT RETURN (CS)" 12 PLACE PLACE PLACE DISK INTO DRIVE THEN HIT RETURN (CS)" 12 PLACE	4 3,175,32,162,245 ,3,96,32,183,247 3,193,169,64,133 ,3,237,61,3,170, 237,62,3,168,24, 3,133,174,152,10 5,124,246,96,169,
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7:ITMENFLAG-1 3 1410 FFFLAGS-1THENGOTO1340 3B 1420 FFLATHENGOTO1340 4B 1430 FRINTLS; 8B 1440 FINTLS; 8B 1440 FFLAGS-1THENGOTO1340 4B 1430 FRINTLS; 8B 1440 FINTLS; 8B 1850 F	,3,96,32,183,247 3,193,169,64,133 ,3,237,61,3,170, 237,62,3,168,24, 3,133,174,152,10 5,124,246,96,169,
13 1410 FFL-4GC > 1THENGOTO1340 88 1420 FFL-4THENGOTO1340 88 1430 PRINILS; 88 1430 PRINILS; 88 1430 PRINILS; 89 1440 INS-INS-LS:GOTO1340 80 1440 INS-INS-LS:GOTO1340 81 1430 PRINILS; 80 1440 INS-INS-LS:GOTO1340 81 1430 PRINILS; 80 1440 INS-INS-LS:GOTO1340 81 1450 PRINILS; 80 1440 INS-INS-LS:GOTO1340 81 1450 PRINILS; 80 1440 INS-INS-LS:GOTO1340 81 1450 PRINILS; 80 1450 PRINILS; 81 1450 PRINILS; 81 1450 PRINILS; 82 1650 PRINILS; 83 1650 PRINILS; 84 1650 PRINILS; 85 1540 PRINILS; 86 1540 PRINILS; 87 1550 PRINILS; 88 1540 PRINILS; 89 1550 PRINILS; 80 1540 PRINILS; 8	3,193,169,64,133 ,3,237,61,3,170, 237,62,3,168,24, 3,133,174,152,10 5,124,246,96,169,
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1450 REM	3,133,174,152,10 5 ,124,246,96,169,
1460 PRINT"CHOTE, DOWN, RUSON, BLACK, BLACKLYFILENAME: [LEPCIS]ISP DISK PRINT"CHOME, DOWN, BLACK, RUSON] PLACE THEN 1470 FLS="" THEN 1470 FLS=" THEN 1470 FLS="" THEN 1470 FLS="" THEN 1470 FLS=" THEN 1470 FLS=""	3,133,174,152,10 5 ,124,246,96,169,
BLACK)FILENAME: [CEPCI6]]CFP C12,UP,RIGHTI]"; 70 1830 PRINT"(HOME, DOWN, BLACK, RVSON)TAPE OR DISK:CSPC27]"; 63 2320 DATA 18 23	5 ,124,246,96,169,
C12, UP, RIGHT113";	5 ,124,246,96,169,
1470 FLS="" FLS=""THEN1480 FLS="" FLS=""THEN1480 FLS=" FLS=""THEN1480 FLS="	,124,246,96,169,
## 1490 L=LEN(FLS) ## 1490 L=LEN(FLS) ## 1490 L=LEN(FLS) ## 1500 IFAS=CRR\$(20)ANDL>0THEN ## 1500 IFAS=CRR\$(21)THEN1460 ## 1500 IFAS=CRR\$(13)ANDL>0THEN ## 1500 IFAS=CRR\$(13)THEN	
1 190	State of the Control
1500 1FAS=CHR\$(20)ANDL>0THEN 1530 1540 1FAS="(CLR]"THEN1460 1520 GOTOIS50 1520 GOTOIS50 1520 FLS=LEFTS(FLS,L-1):PRIN 1540 GOTOI460 1550 TFAS=CHR\$(13)ANDL>0THEN 1510 1560 TFAS=CHR\$(32)THEN1580 1560 TFAS=CHR\$(32)THENRETURN 2390 DATA 1580 1570 TFASCHAS(13)ANDL>0THEN 1610 TRAS=CHR\$(32)THENRETURN 2390 DATA 1580 TFAS=CHR\$(32)THENRETURN 2390 DATA 1580 TFAS=CHR\$(32)THENRETURN 2390 DATA 1590 TFAS=CHR\$(32)THENRETURN 2390 DATA 2490 DATA 1590 TFAS=CHR\$(32)THENRETURN 2390 DATA 2490 DATA	9 1 141 60 3 133
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1510	122 100 100 0 15
1520 GOTO1550	133,100,103,0,13
18 1530 FLS-LEFTS(FLS,L-1):PRIN	7, 169, 65, 133, 187
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	276,17 TO 300:NEXT:POX KE 54277,0:POKE

C16 Games

Here's a couple of really worthwhile games for you to get hold of. Especially for the C16 and Plus/4.

By Paul Eves

XCELLOR 8

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cellor 8 is a fast action, smooth scrolling, multi-screen, kill or be killed type of game for the Plus 4 and C16. Set in the future, you are a modern day bounty hunter. Your task is to search the streets for criminals, known as the runners. Once found, you must shoot them down and capture them. Once you've captured your prey, you may exchange him/her/it for credits at the bank. Having accumulated some money, you may buy extra equipment for your craft. Better shields, mines, detectors etc. The game starts outside the city bank.

Press fire on the joystick and select your speed, using the function keys. F1 is slowest and HELP key is fastest. You are now ready to patrol the area looking for the runners. Once you have hit a handful of runners, (on the first level, you only need hit them once to capture them), take them to the bank to collect your reward. Inside the bank, you will see three long queues of droids waiting to be served. The idea is to get to the front of the queue as quickly as possible. You achieve this by pressing the fire button repeatedly. If your queue is moving slowly, move the stick up and down to change queues. The longer you are in the queue, the less you will get

for each runner, so speed is essential.

Having now gained some money, you may go to the shop to buy some extra supplies. Select the item you want by moving the joystick, and press fire to buy the item required.

To leave the shop you must press CONTROL.

One thing to look out for are the innocent droids. These little creatures turn up everywhere. If you should hit one of these droids, you must take it to hospital for repair. Therefore you are wasting valuable time. To add to your troubles, you must have enough money to pay for the repair also. Should you be unfortunate to hit three of these droids, the game ends.

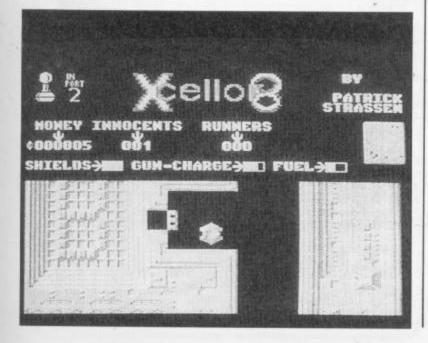
To help you in your task, you are fitted with a scanner which tells you where everyone is. Keep a watchful eye on it.

I was fairly well impressed with this game. The graphics are the standard BAS relief type. The scrolling was nice and smooth, with no apparent chinks. There must be getting on for 30 to 40 screens worth of playing area. This makes for an exciting game all told.

Touchline

Title: Xcellor 8, Company: Gremlin Graphics, Alpha House, 10 Carver Street, Sheffield, S1 4FS. Machine: C16. Price:

Originality: 6/10. Playability: 7/10. Graphics: 7/10. Value:



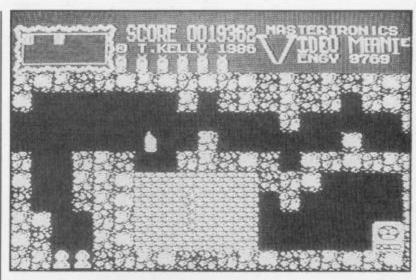
Video Meanies

Video Meanies has you running around all kinds of caves and rooms in an attempt to turn off TVs. As usual you have all sorts of flying horrors preventing you doing this. For the most part, these present little or no impedence to your quest. Obviously, there there are the rather stubborn type that just will not give up (just perservere).

Before I go any further, let me just say that I would suggest you make a map of your travels. There appears to be quite a number of caverns/rooms to visit. And there is it seems, more than one way of going about it. As well as turning off the TV sets, there are a number of keys to collect. These keys unlock routes, which would otherwise be closed to you.

So how do you get around? Some of the caverns are simply in at one end, avoid the nasties, turn off the set, collect the key if there is one, then out at the other end. No dead ends, no trouble. Others on the other hand, are a different kettle of fish. At first it appears there is no entry and no exit. The idea being to blast your way through connecting walls, floors etc. It is this aspect of the game, which for me, made it very enjoyable to play. The programmer has put quite a lot of thought into the screen layouts, and I would like to congratulate him on his fiendishness. A word of warning here. It is OK to touch the small rectangular bricks, but avoid virtually everything else on the screen.

The sound effects are quite good overall, and for me, the graphics are very good indeed. (I've always liked this type of graphics on my 64). I find that this is one of those games you just have to keep playing, just to beat your previous score.



Touchline

Title: Video Meanies. Company: Mastertronic, 8-10 Paul Street, London EC2A 4JH. Price: £1.99. Machine: C16/Plus/4.

Originality: 7/10. Playability: 8/10. Graphics: 8/10. Value: 10/10.



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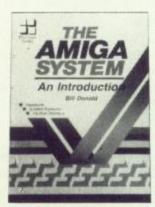




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USA Today

Your Commodore's US correspondent reports on the CBM scene from his hideaway in Parrott, Georgia.

By Lewis Tilley

The uneducated youth of America is being quietly seduced by the computer. Lured into learning by programs they play as games. Students find themselves raising their scholastic scores higher than their non-computer orientated fellows.

Worst software offenders are historical simulations such as *Colonial Conquest* which lays the foundation for understanding some of the third world problems of today and *Rails West!* which probes the pinpointed area of the US's development of its railway systems. Both of these games, developed around real periods of history, are published by Strategic Simulations, Inc. Cost is \$40 plus postage and handling.

Seven Cities of Gold by Electronic Arts doesn't merely duplicate American history but puts the student into the boots of conquistadores to discover how the Americas were taken over in the 17th century, (available in the UK from Ariolasoft).

Recent history can be cribbed from the flood of war games which now include Battlegroup, a companion of Kampfgruppe in the fighting of World War II. Both are from Strategic Simulations. Europe Ablaze which is the bombers' war in Europe, is by Strategic Studies Group.

Older wars are remembered in Games Designer's Workshop's Battle of Chickamauga for \$35 and Strategic Simulations' Battle of Antietam both of which detail crucial battles in the American Civil War (or "Tha Wah between tha States", as we of the South prefer to call it'.

The parents of the young US child have become involved in this educational scheme. They raise money with such projects as "garage sales" and "second hand" shops, neither of which sell either garages or second hands. In order to supply the school rooms of America with computers. Unfortunately, these computers are

usually Apples, not Commodores, but some states (North Carolina for one) are introducing an extensive use of 64s in their school art lessons.

One national magazine, Family Computing, is devoted almost exclusively to the use of computers in education. Its owners are the prestigious Scholastic Inc. long a publisher of books and magazines for school children. They now publish educational software as well. The Stickybear Software series is highly praised by educators across the country. Town Builder is one of the newest. It "teaches spatial relations and basic map skills" to the five to nine age group. Car Builder is for the older child but is also published by Weekly Reader Family Software which is the name of Scholastic's software division.

S.A.T. does not abbreviate Saturday in the US. It stands for Scholastic Aptitude Test. It is a multiple choice test which our colleges use to predict performance of potential students. A high score helps a graduating high school (secondary school) student gain admittance to their choice of colleges. Naturally, the software companies of the US supply tutoring programs for the S.A.T. More than a dozen were reviewed in Family Computing recently. You might like to test yourself against the American level of secondary school education with one of these. Mastering the SAT was written by educators from the National Association of Secondary School Principals and is published by CBS Software and costs \$80. You think that's expensive? You could pay as much as £250 for Owlcat SAT Preparatory Course, a 60-hour program from Digital Research. We take these things very seriously over here! Even our potential athletes are screened before they start their college careers by the Scholastic Aptitude Tests. "No pass SAT, no play football or basket ball first year in college."

Now, on to happier news. In the opinion of many, Commodore has it made. Well, maybe the Amiga isn't selling as fast as Commodore needs in order to assure a fat profit, and the Apple GS (the GS stands for GRAPHICS AND SOUND) is taking the Amiga on in the market place. But, from here at the end of 1986, it looks like Commodore is going to be around a long, long time.

Why does our old Faithful continue to flourish in spite of adversity? Software is why. First time buyers of computers are always advised to "Choose the software, then pick a computer within your budget that will run it."

GEOS is the easiest operating system yet devised for the beginner. Two new GEOS disks have been added to the system this month by Berkely Softworks and more are promised by other programmers. The two new ones are FontPack which adds 20 new type faces or "fonts" to geo Write, the word processor, the Desk Pack. The latter is a four in one applications pack. Art Grabber gives access to the artwork you create using Print Shop, Print Master and Newsroom, Calender may be called upon when needed. Icon Editoyou "customize your GEOSfile icons with the graphic of your choice. For good measure the creators of GEOS throw in a souped up Black Jack icon/card game. You may order Font Pack for \$29.95, Desk Pack for \$34.95. Add \$5.50 for overseas shipping and handling and wait at least six weeks.

Touchline

Strategic Simulations: 1046 N. Rengstorff Ave, Mountain View, Ca 94043. Strategic Studies Group: 1747 Orleans Court, Walnut Creek, Ca 94598. Ariolasoft: 68 Long Acre, Covent Garden, London WC2E 9JH. Tel: 01 836 3411. Berkley Softworks: PO Box 57135, Hayward, Ca 94545.

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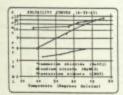
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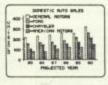
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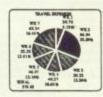
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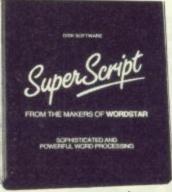
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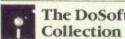
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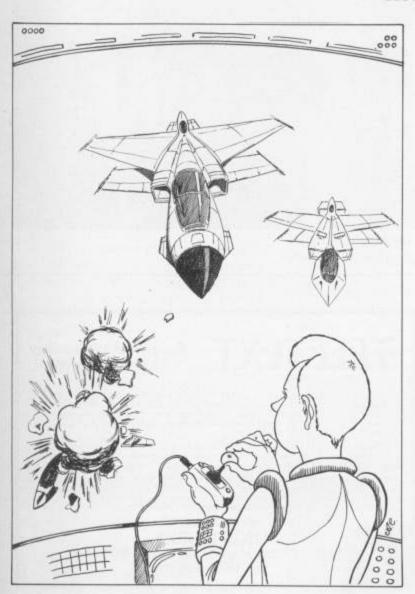
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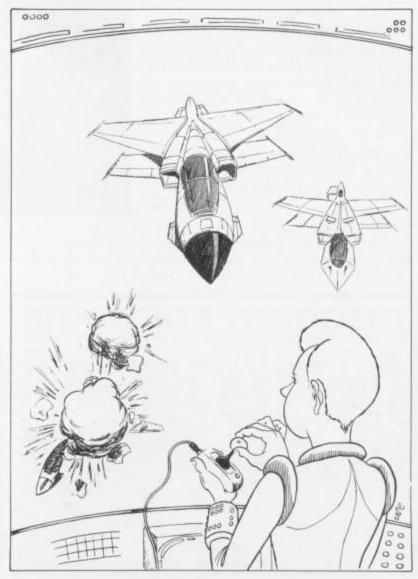
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Stick 'em Up

A good joystick is a must for any self respecting games player. Here's your chance to win a Speed King from Konix.





This month we're offering you a chance to win a Konix Speed King joystick. For anyone who loves top zap this is the ideal accessory. It's available for the C64 and C16/Plus/4 s there's a chance for everyone.

The Speed King joystick has been well tested by Your Commodore. At a recent party in the Video Cafe, in London's West End, our editorial assistant, Stuart Kirkham beat all comers in a Daley Thomson's Decathlon high score competition and walked off with a weekend for two in Amsterdam courtesy of Konix, whose joystick had helped him to his 58,584 point victory. Our pic shows Stuart (the staunch Westham supporter on

the left) and Wyn Holloway, Konix's MD. The only question remaining is which of the editorial staff will be going on holiday with him? (The editor's decision is final!)

How To Enter

To get your hands on a Speed King joystick of your own, just study the two cartoons. There are several differences between them.

Spe	ed King Comp	etition Entry	Coupon
Name			
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The Rules

Entries will not be accepted from employees of Argus Specialist publications and Konix Computer Products. This restriction applies to employee's familes and agents of the companies. The How To Enter section forms part of the rules. The editor's decision is final and no correspondence will be entered into.

Send you entry to: Your Commodore, Speed King Competition, 1 Golden Square, London W1R 3AB. Closing date: Friday 27 February 1987.



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Machine Code Library

If you need to find something in a book then you go to a library. In this new series we will give you a library of Machine Code routines that will prove to be invaluable.

By Paul Eves

A library of any sort is an excellent source of information. In this series I will be presenting a series of routines that you can store away on a library disk and use in your own programs when occasion demands it.

Over the last few months Your Commodore has been running a Machine Code Programming series. Now that the series has ended a lot of you will be looking for ideas for programs and wondering how to implement your new found knowledge. The routines in this series are intended to show you how to achieve certain tasks, from adding numbers together to moving sprites on the screen. The routines will build up to an invaluable set of utilities that you can use within your own programs.

All of the programs will be presented in the form of an assembly language program together with comments. Following the program through and reading the comments will show you just how the program works. I have used the Commodore Macro Assembler to enter these programs and most of the commands will be common to all good assemblers.

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This month I am presenting two utilities. The first one is a Directory Displayer which will produce a listing of a disk in the dirve on the screen without affecting the program currently in memory. The second is a sprite aid and makes things such as altering sprite priorities in machine code much easier.

Library Routine: 1 Program File: Sprite Routines

Because the maintenance of sprites can be a very repetive business, it makes sense to make all the routines as subroutines within your main program. The following routine does just that. The only parameters that are required, are for the 'A', 'X' and 'Y' registers to have the required value stored in them, before calling the respective routine.

```
PROGRAM: SPRITE ROUTINES
                           (SPRITE MAINTENANCE S/R
(A,X & Y REGISTERS NEED
(REQUIRED VALUES IN THEM
(BEFORE CALLING EACH
(ROUTINE
                                                                                                                        (EXPAND Y (A-SPINUMBER(S))
                                                                                              1530 EXPANY ORA SPYEXP
1540 EXPANY ORA SPYEXP
1550 STA SPYEXP
1560 RIS
  1010
1020
1030
                                                                                               1550
1550
1570
1580
1590
1600 SHRINY
  1040
  1050
1060
1070
                                                                                                                        SHRINK Y (A-SPINUMBER(S))
                         *-SC000 | OR WHERE YOU LIKE
                                                                                                                       EOR #SFF
AND SPYEXP
STA SPYEXP
RIS
                                                                                              1610 AND SPYEXP
1620 STA SPYEXP
1630 RIS
1640 ; POINTER (A+1
1650 ; POINTER (A+1
1660 RIS
1680 ; POSITION(X+1)
 1090
1100
1110 SPIBLX
1120 SPENAB
1130 SPXPOS
1140 SPYEXP
1150 SPXEXP
                                          SPRITE BLOCK NUMBER
SPRITE ENABLE REG
SPRITE HORIZ POS
SPRITE VERT EXPAND
SPRITE HORIZ EXPAND
SPRITE PRIORITY REG
MULTICOLOUR REG
SPR-SPR COLLISION
SPR-CHAR COLLISION
SPRITE MULTI COLORE
UPTO SDOZE, SPRICOL
                              50000
50000
50017
                                                                                                                        POINTER CA-FRAME: X-SPRI)
1150 SPXEXP
1160 SPRPRI
1170 SPRULT
1180 SPSCOL
1200 SPRULT
1210 SPRULT
1220 SPCOL
1230 IROFLO
1240
                                                                                                                        : POSITION(X-NO/A-HORI/Y-UER)
                                                                                               1700
                                                                                              1710
1720
1730
1740
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1760
1760
                             $001F
$0025
$0026
$0027
$0015
                                                                                                        POSIT
                                                                                                                       TAX
 1240
 1258
1260
1270 SPION
1280
                                                                                                                       STA SPXPOS, X
                           SPRITE ON (A-SPINUMBER(S))
                         ORA SPENAB
STA SPYEXP
                                                                                              1750
1800
1810
 1230
                                                                                                                       HULTIC-ON (A - SPRT NO'S.)
                          SPRITE OFF (A-SPINAMBER(S))
                                                                                                                       MCON ORA SPHULT
STA SPHULT
RTS
 1330 SPTOFF
1340
                         EOR HEFF
AND SPENAB
STA SPENAB
                                                                                              1870
 1350
                                                                                                                       MULTIC-OFF (A - SPRT NO'S.)
                          EXPAND X (A-SPINUMBER(S))
                                                                                             1910 HCOFF EOR #SFF
1920 AND SPHULT
1930 STA SPHULT
 1400 EXPANX DRA SPXEXP
                         SIA SPXEXP
                                                                                                                    COLOR (A-COLOUR/X-NO.)
 1440
1450
1450 SHRINX
1470
                          SHRINK X (A-SPINUMBER(S))
                        EOR #SFF
AND SPXEXP
SIA SPXEXP
RIS
                                                                                             1980 COLOR STA SPCOL, X
                                                                                             1990
1480
1490
                                                                                                                    HCCOL (X-MULTI / Y-MULTE)
                                                                                            2030 NCCOL STX SPHUL1
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0.602		STY SPHULZ
E050		RTS
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2080		
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2100		STA SPEPRI
2110		RIS
0315		1
2130		PRIDRITY OFF (A-NO'S)
0415		
2150 P		EOR WEFF
8168		AND SPEPRI
2170		STA SPBPRI
2180		RIS
2190		
6500		
2210 .	END	

Library Routine:2 Program File: Read Directory

The following routine allows the Directory to be read, without loading it into the computer's memory. The routine can be called from within a program, or can be used as a stand alone routine.

```
PROGRAM: DIRECTORY
1010 :LIST DIRECTORY TO SCREEN WITHOUT
1020 :DISTURBING PROGRAM IN MEMORY
1050 - SCB20 OR WHERE YOU LIKE
1060 FACOUT - SBDCD COUTPUT FOS INTERGER
1070 IECBUS - SF305 OPEN FILE ON IECBUS
1080 DIRFIN - SF642 UNLISTEN AND CLOSE
```

- 1	1090 TK5A	- SFF96 ; SECADO FOR TALK DEV
- 1	1100 ACPTR	- SFFAS : GET DATA FROM S-BUS - SFFAS : STOP TALKING
-1	1110 UNIALK	- SFFDE : DUTPUT CHAR TO CHAN
- 1	1130 TALK	- SFFBY ; CHO DEU TO TALK
- 1	1140 TEMP1	- SFB ; TEMPORY STORE
- 1	1150 TEMP2	- SFC : TEMPORY STORE
-1	1160 TEMP3	- SFD TEMPORY STORE
-1	1170 FNADRI	
-1	1180 FNADR2	- SB7 LLENGTH CURRENT FILE
-1	1190 FNLEN 1800 LSTX	- SCS CURRENT KEY PRESSED
_1	1210 ST	- 190 STATUS WORD
-1	1220 FA	- 580 (CURRENT DEV NUMBER
	1230 SA	- SB9 ; CURRENT SECADOR
-1	1 0 4 2 1	
- 1	1250	
_	1569 1	
- 1	1270	
	1280 ; 1290 DIRECT	100 #593
	1300	JSR CHROUT
- 1	1310	LDA #530
_	1320	STA TEMP2
	1330	LDA #\$02
-1	1340	STA TEMP3
- 1	1350	STA ST
	1350	LDA #524
- 1	1300	STA TEMP1
	1390	LDA #SFB
	1400	STA FNADR1
	1410	LDA #500
-1	1420	STA FNADR2 LDA TEMP3
	1430	SIA FNLEN
	1440	LDA WS08
	1460	STA FA
	1470	LDA #560
	1480	STA SA
	1490	JSR IECBUS
	1500	JSR TALK
	1510	LDA SA
	1530	JSR TKSA
	1540	LOY ST
	1550	BNE FINIS
	1960	FDA #202
	1570 STOREY	BIT IDIFI
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1580	JSR ACPIR
1590	LOX TEMP2
1600	STA TEMPE
1510	LDY ST
1520	BNE FINIS
1630	LDY TEMP1
1640	DEY
1650	BNE STOREY
1660	TON TENES
1670	JSR FACOUT
1680	LDA WEED
1690	JSR CMROUT
1700 ACPI	JSR ACPTR
1710	LDX ST
1728	BNE FINIS
1730	TAX
	BED NXTLIN
1740	
1750	JSR CHROUT
1750	JMP ACPT
1770 NXTLIN	
1780	JSR CHROUT
1790	LDA LSTX
1900	CMP #S3F
1810	BEQ FINIS
1820	LDY #504
1830	BNE STOREY
THE RESERVE OF THE PARTY OF THE	JSR DIRFIN
1850 :	
1860 ; YOU C	AN FINISH HERE WITH A RTS OR
	ON AND READ ERROR CHANNEL
1980 ;	
1890 DERROR	
1900	JSR CHROUT
1910	LDA #500
1920	SIA SI
1930	LDA #\$08
1940	SIA FA
1950	JSR TALK
1980	LDA #SEF
1970	SIA SA
1990	JSR TKSA
1990 ERRIN	LOY ST
2000	BNE ENDIT
2010	JSR ACPTR
8920	JSR CHROUT
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0100	BNE ERRIN
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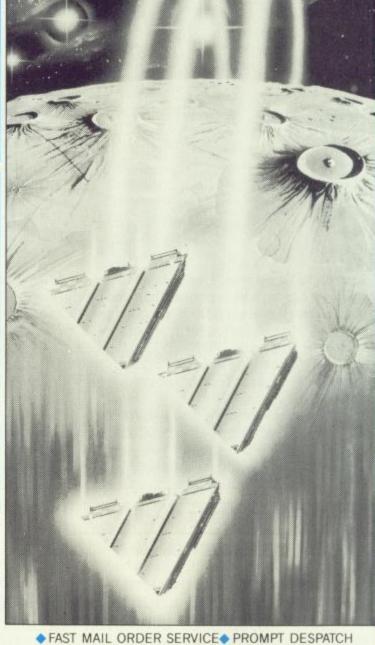
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Bare Facts

A detailed knowledge of your computer is important when writing or translating programs. We provide memory maps of all the popular Commodore computers to help you.

Any of the programs that are printed in Your Commodore can be used on more than one type of computer with just a few changes. The important thing is to know what you need to change and what it should be altered to. For axample the command POKE 53280,0 on a C64 would change the colour of the screen to black. If you were using a C16 or C128 you could replace the command with COLOR 3,0.

Over the next few months we will be taking a detailed look at the internal workings of the Commodore range of computers. This way, should you wish to translate a program from one machine to another, you should be able to find what you are looking for.

This month we are taking a look at the zero page memory maps of the various computers. This should help both machine code and Basic programmers find out just what those ever present POKES do. The memory maps aren't complete. What is provided is a list of the memory locations that you will probably come across in your everyday Basic and Machine code programming.

In future issues we will be taking a look at the graphics and sould chips and providing memory maps for all of the popular Commodore micros.

Commodor	e 128 (C128 Mode)	65-66	Line number of current DATA statement
LOCATION ALL BANKS	DESCRIPTION -	67-68 71-72 73-74 99	Address of current DATA Variable name Variable address
0	8502 Data Direction Register		Accumulator #1: Exponent Accumumator #1: Mantissa
0	8502 Data I/O Register	104	Accumulator #1: Sign
2-4	SYS address argument	106-111	Accumulator #2: Exponent etc.
5-9	SYS register save area	112	Sign comparison, Acc#1 & Acc#2
15	Data type: FF=string, 00=numeric	113	Accumulator #1 low-order (rounding)
16	Data type: 00=floating point, 80=integer	125-126 144	Basic pseudo-stack pointer Status Variable ST
21	Current I/O prompt flag	145	STOP and RVS flags
22-23	Integer value	152	Number of open files
45-46	Pointer: start of Basic (bank 0)	153 154	Default input device (0) Default output device (3)
47-48	Pointer: start of variables (bank 1)	157	Flag: Messages 192=all messages, 64=errors only,
49-50	Pointer: start of arrays		0=none
51-52	Pointer: end of arrays	160-162	Jiffy Clock
53-54	Pointer: string storage	174-175	Tape end address / End of
57-58	Pointer: limit of memory		program
	(bank 1)	183	Characters in file name
59-60	Basic line number	184	Logical file number
61-62	Position in Basic line	185	Secondary address

	ALCOHOLE 1992年 19			
186	Device number	886-895	Secondary address table	
187-188	Pointer: Filename	896	CHRGET routine	
208	Number of characters in	902	CHRGOT routine	
	keyboard buffer	927-938	Subroutines to fetch from RAM	
209	Flag: Function key	, , , , , ,	banks	
210	Pointer: Function key string	991	Accumulator #1 overflow	
211	Flag: 0=no shift, 1=shift,	65280	MMU configuration register	
	2=Commodore, 4=Control, 16=ALT		MMU load configuration	
212	Current key	05201 04		
213			register	
215	Last key 88 if no key	DANTE O (D.		
213	Flag: 40 or 80 columns - 0=40	DAIN U (Ba	sic programs)	
217	Character set - 0 ROM / RAM	100/ 2022	10 - 1	
224-225	Character set - 0=ROM, 4=RAM		40 column screen memory	
226-227		2048-2559	Basic run time stack	
CONTROL OF STREET STREET STREET	Pointer: Colour screen line	2592	Size of keyboard buffer	
228-231	Values of window: Bottom, Top,	2594	Flag: Key repeat: 128=all,	
222 224	Left, Right	0.00	64=none	
232-234	Input location: column start,		Delay for repeat	
225	line start, line end	2596	Delay before repeat starts	
235	Cursor position on line	2598	40 column cursor mode - blink	
236	Cursor position on row		or solid	
237	Max number of screen lines	2603	80 column cursor mode	
238	Max number of screen columns	2604	Pointer: start of screen	
241	Character colour		memory/ character data	
243	Flag: Reverse	2605	Pointer: start of high res	
244	Flag: Quote mode		screen	
245	Flag: Insert mode	2607	Pointer: start of 80 column	
250-255	FREE SPACE		screen	
512-600	Basic input buffer	2608	Pointer: start of colour	
674-686	PEEK any bank routine		screen for 80 column	
687-701	POKE any bank routine	2816-3007	Cassette buffer	
702-716	Compare any bank routine	4096-4106	Length of function key strings	
717-738	JSR to another bank	4107-4351	Function key strings	
739-763	JMP to another bank	4616	Address of error variable ER	
780-781	Vector: Crunch	4617-4618	Line number of error (EL)	
782-783	Vector: LIST	4624-4625	Pointer: End of Basic program	
784-785	Vector: Execute		in bank 0	
786-787	UNUSED	4626-4627	Pointer: maximum Basic program	
788-789	Vector: IRQ		space in bank 0	
790-791	ALAN TO THE PROPERTY OF THE PR	4632-4634	USR program jump	
792-793	Vector: NMI	4635-4639	RND seed value	
794-795	Vector: OPEN	1000 4000	THE SECO VALUE	
796-797	Vector: CLOSE			
798-799	Vector: CHKIN	1907	SHPACE CHIPS	
800-801	Vector: CHKOUT		EEMAL.	
802-803	Vector: CLRCHN	6304	8344	
804-805	Vector: CHRIN	19364		
806-807	Vector: CHROUT			
808-809	Vector: STOP			
810-811	Vector: GETIN			
812-813	Vector: CLALL	1039		
814-815	Vector: CLALL Vector: USR vector	1	RADIC INTERPRETER	
816-817	Vector: LOAD	0	2.5.3.4 MONVY!	
818-819	Vector: SAVE	///	HAM BANK ((WARLANG), REMONT) MEMORY MANAGEMENT (MIT	
842-851	Keyboard buffer	SANW BANK O (SWEDSHAW)		
866-875	Logical file table	C128		
876-885	Device number table			
070 005	pearce immer capte			

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Plus/4			61
0	7501 Data direction register	105-110	overflow
1	7501 8 bit I/O port (as 64)	111	Accumulator #2 as for #1
3-4	New start address (RENUMBER)	112	Accumulator sign comparison
5-6	Step width (RENUMBER)	113-114	Accumulator #1 rounding
7	Search character		Pointer: Cassette buffer
8	Flag: Searching for quote	115-116	Flag: AUTO command, 0=OFF
9	Screen column from last TAB	117	Flag: 1= 10K reserved for
10		12/-125	graphics
11	Flag: 0=LOAD, 1=VERIFY	124-125	Pointer: GOSUB stack
11	Input buffer counter, No. of elements	131	Current graphics mode:00=text,
13			20=Hires,60=split hires,A0=
14	Flag: FF=string, 00=numeric Flag: FF=integer, 00=floating		multicolour, EO=split- multicolour
	point	132	
15	Flag: Data scan/ LIST quote/	133	Current colour Multi-colour 1
	memory flag	134	Foreground colour
16	Flag: User function Call	135	Max number of columns
17	Flag: 00=INPUT, 40=GET, 98=	136	Max number of rows
	READ	144	Status word ST
20-21	Integer value	145	Flag: STOP and RVS keys
22	Pointer: Temporary string stack	147	Flag: 0=LOAD, 1=VERIFY
23-24	Vector: Last temporary string	148	Flag: Character in serial
25-33	Temporary string stack	140	buffer 00=no, 80=yes
34-37	Utility pointer area	149	Character in buffer for serial
38-42	Product area for	147	address
multipli		151	Number of files open
43-44	Pointer: Start of Basic	152	Default input device
45-46	Pointer: Start of Basic	153	Default output device
	variables	154	Flag:80=Direct mode, C0=monitor
47-48	Pointer: Start of Basic arrays	154	00=program
49-50	Pointer: End of arrays	157-158	Pointer: Tape end/Program end
51-52	Pointer: Start of strings	163-165	Jiffy clock
53-54	Pointer: Current string	171	Length of filename
55-56	Pointer: Top of Basic memory	172	Logical file number
57-58	Current Basic line number	173	Secondary address
59-60	Previous Basic line number	174	Device number
61-62	Pointer: CONT Basic line number	175-176	Pointer: Filename
63-64	Current DATA line number	178-179	I/O start address
65-66	Pointer: Current DATA address	180-181	Basic loading address
67-68	Vector: INPUT routine	182-183	Pointer: Load end address for
69-70	Current variable name		tape
71-72	Variable address	194	Flag: RVS (12=Yes,00=No)
73-74	Variable pointer for FOR/NEXT	196-197	Cursor position (x,y)
75-76	Y save, op save, Basic pointer	198	Flag: Key pressed : 40=none
Sharp Si	save	199	Input from screen/keyboard
77	Comparison: 1=Larger, 2=Equal,	200-201	Pointer: screen line
	4=Smaller	202	Pointer: Screen column
78-83	Misc numeric work area	203	Flag: 0=not in quote mode
84-86	Vector: functions	204	Length of current screen line
87-96	Misc work area	205	Pointer: cursor row
97	Accumulator #1 exponent	206	Output character to screen
98-101	Accumulator #1 mantissa	207	Flag: Insert mode: >0=number
102	Accumulator #1 sign		of inserts
103	Series evaluation constant	234-235	Pointer: Current screen colour
	pointer	236-238	Vector to keyboard decode
104	Accumulator #1 Hi-order	239	No. of characters in keyboard
			buffer

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or

275-289 Colour lumi 291-511 Processor s 512-600 Basic input 601-602 Previous Basic 603-604 Pointer: Basic CONT 754-755 Pointer: Find 756-757 Pointer: Find 768-769 Vector: Basic 770-771 Vector: Basic 772-773 Vector: Basic 774-775 Vector: Basic 776-777 Vector: Basic 778-779 Vector: Basic 778-779 Vector: Basic	te, bit6=1:Read inence table in RAM stack t buffer asic line number asic statement for out to fixed routine exed to integer sic error messages sic warm start sic token generator	1343 1344 1345 1346 1347 1348 1349-1350 1351 1362 1363 1364 1365 1366 1367 1368 2038	Size of keyboard buffer Flag: Key repeat :80=all,40= none,00=DEL,space,cursors Repeat speed Repeat delay counter FLAG: shift,CTRL,CBM key last pattern of shift Delay Pointer: keyboard table setup Flag: SHIFT 80=no, 00=yes Program counter high Program counter low Processor flags Processor A reg Processor X reg Processor Y reg Processor stack pointer Current Key pressed
782-783 Vector: Cre 784-785 Vector: Pre 786-787 Vector: Int	dware interrupt interrupt nal OPEN SE IN OUT CHN IN OUT P		PLUS 4
812-813 Vector: Moni 814-815 Vector: LOAI 816-817 Vector: SAVI 818-1010 Tape buffer 1139-1144 CHARGET subrations 1145-1156 CHRGOT subrations 1263 Last error in 1264-1265 Row number of 1266-1267 Reference for 1280 USR jump con 1281-1282 USR address 1283 RND seed vall 1289-1298 Table of log 1299-1308 Table of dev 1309-1318 Table of sect 1319-1328 Keyboard buff 1329-1330 Start address 1331-1332 Pointer: End system 1339 Current color Bit 7: 1=f1	routine coutine coutin	Commodo LOCATION 0 1	DESCRIPTION 6510 On-chip Data Direction Register 6510 On-chip 8-bit input/output register. Bit No: 0 LOWRAM signal (0=BASIC ROM OUT) 1 HIRAM signal (0=KERNAL ROM OUT) 2 CHAREN signal (0=CHARACTER ROM IN) 3 Cassette data output line 4 Cassette switch sense (1=switch closed) 5 Cassette motor control (1=ON, 0=OFF) 6 and 7 unused Unused Jump vector: Convert Floating point numbers to Integer. Jump Vector:Convert Integer- Floating Search Character (34) quote Flag:Scan for quote at end of string

Control of the last			
9	Screen column from last TAB		BASIC text
10	FLAG: 0=LOAD, 1=VERIFY	121	Entry to get same byte of text
11	Input buffer pointer/Number of	+ H.A.	again
	subscripts.	122-123	Pointer: Current byte of BASIC
12	FLAG: Default array dimension -		text
	Holds value of letter of most	139-143	Floating RND function seed value
BUELLO STATE	recent dimensoned array.	144	Kernal I/O status word: ST
13	Data type: 255=String, O-Numeric	145	Flag: STOP key/ RVS key
14	Data type: 128=Integer,	146	Timing constant for tape
	0=Floating point	147	Flag: 0=LOAD, 1= VERIFY
15	Flag: DATA scan/ LIST quote/	148	Flag: Serial bus output char.
WINDS NO.	Garbage call		buffered
16	Flag: Subscript ref/ User	149	Buffered character for Serial
	function call		bus
17	FLAG: 0=INPUT, 64=GET, 152=READ	150	Cassette sync number
18	Flag: TAN sign/ Comparison	151	Temp data area
10	result	152	No. of open files/ Index to file
19	Flag: INPUT prompt		table - Max number of files is
20-21	Temp: Integer value		10
22	Pointer: Temporary String Stack	153	Default input device (0)
23-24 25-33	Last temp string address		0 - Keyboard
34-37	Stack for temporary strings		1 - Cassette
34-37	Addresses stored here point to		2 - RS232
	machine code routines in Basic ROM		3 - Screen
20 10			4 or 5 - Printer
.38-42	Floating point product of	151	8 to 11 - Disk drive
43-44	multiply	154	Default output (CMD) device (3)
45-44	Pointer: Start of BASIC text -	155	Tape character parity
45-46	Normal value: 2049	156	Flag: Tape byte received
45.40	Pointer: Start of BASIC	157	Flag: \$80=direct mode,
47-48	Variables	158	\$00=program
49-50	Pointer: Start of BASIC arrays	159	Tape pass 1 error log
51-52	Pointer: End of BASIC arrays +1 Pointer: Bottom of string	160-162	Tape pass 2 error log
34 34	storage	163-164	Real time Jiffy clock Temp data area
53-54	Utility string pointer	165	Cassette sync countdown
55-56	Pointer: Highest address that	166	Poiner: Tape I/O buffer
	can be used by Basic.	167	RS-232 Input bits / Cassette
57-58	Current BASIC line number		temp
59-60	Previous BASIC line number	168	RS-232 RS232 Input bit count /
61-62	Pointer: Basic statement for		cassette temp
	CONT	169	RS232 flag: check for start bit
63-64	Current DATA line number	170	RS-232 Input byte buffer/
65-66	Pointer current DATA item		cassette temp
	address	171	RS-232 Input parity / cassette
67-68	Vector: INPUT routine		short counter
69-70	Current BASIC variable name	172-173	Pointer: Tape buffer/ Screen
71-72	Pointer: Current BASIC variable		scrolling
	data	174-175	Tape end address/ end of program
73-74	Pointer: Index variable for	176-177	Tape timing constants
75 65	FOR/NEXT	178-179	Pointer: Start of tape buffer
75-96	Temp pointer/ data area	180	RS-232 Out bit count/ Cassette
97	Floating point accumulator #1:	101	temp
00 101	Exponent	181	RS-232 Next bit to send/ Tape
98-101	Floating Accumulator #1:	400	EOT flag
102	Mantissa	182	RS232 Out byte buffer
102	Floating Acum. #1: Sign	183	Length of current file name
103	Pointer: Series evaluation	184	Current logical file number
104	constant #1 0 51	185	Current secondary address
1.04	Floating Accum. #1: Overflow	186	Current device number
105	digit	187-188	Pointer: Current file name
103	Floating point accumulator #2:	189	RS-232 Out parity / cassette
106-109	Exponent	100	temp
110	Floating accum. #2: Mantissa	190	Cassette read/write block count
111	Floating accum. #2: Sign	191	Serial word buffer
Para Series	Sign Comparison Result: Accum #1 vs #2	192	Tape motor interlock
112	Floating Accum #1. Low order	193-194 195-196	I/O start address
## PER STORY	(rounding)	193-196	Tape Load temps Current key pressed: 64-no key
113-114	Pointer: Cassette buffer	198	
115-138	Subroutine: Get next byte of	1,0	Number of characters in keyboard buffer
	The most byte of		DOLLET
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199	Flag: Print reverse : 1=yes, 0 =		100 = disable repeat
200	no Pointer: End of logical line for	651	255 = repeat all keys Repeat speed counter - Normal
	INPUT	031	value: 4
201-202	Cursor X-Y pos. at start of	652	Repeat delay counter
	INPUT	653	Keyboard SHIFT key / CTRL key /
203	64 no key		CBM key
204	Cursor blink enable: 0=flash		1 Shift pressed
205	Cursor		2 Commodore pressed
203	Timer: Countdown to toggle cursor	654	4 Control pressed
206	Character under cursor	655-656	Last shift pattern Vector: Keyboard table setup
207	Flag: Last cursor blink On/off	657	Flag: \$00 disable SHIFT keys,
208	Flag: INPUT or GET from keyboard		\$80= disable
209-210	Pointer: Current screen line	658	Flag: Auto scroll Down, 0 - on
	address	679-767	Unused locations
211	Cursor column on current line	768-769	Vector: Print BASIC error
212	Flag: Editor in quote mode,		message
213	\$00=NO	770-771	Vector: BASIC warm start
214	Screen line length	772-773	Vector: Tokenize BASIC text
215	Current cursor line number Temp. data area	774-775	Vector: Basic text list
216	Flag: insert mode >0=#inserts	776-777 778-779	Vector: Basic character dispate
217-242	Screen line link table/ Editor	780	Vector: Basic token evaluation
	temps	781	6502 A register 6502 X register
243-244	Pointer: Current colour RAM	782	6502 Y register
	location	783	6502 SP register
245-246	Vector: Keyboard decode table	784	USR function Jump instruction
247-248	RS-232 input buffer pointer		(76)
247-248	RS-232 output buffer pointer	785-786	USR address low byte/ high byte
251-254	Free zero page	787	Unused
55 544	BASIC temp data area	788-789	Vector: Hardware IRQ interrupt
256-511	Micro processor system stack		Normal value:59953
512-600 501-610	System INPUT buffer	790-791	Vector: BRK instruction
MT OTO	KERNAL table: Active logical file numbers	702 702	interrupt
11-620	Kernal table: Device number for	792-793 794-795	Vector: NMI
	each file	796-797	Kernal OPEN routine vector Kernal CLOSE routine vector
21-630	KERNAL table: Second address	798-799	Kernal CHKIN routine vector
	each file	800-801	Kernal CHKOUT routine vector
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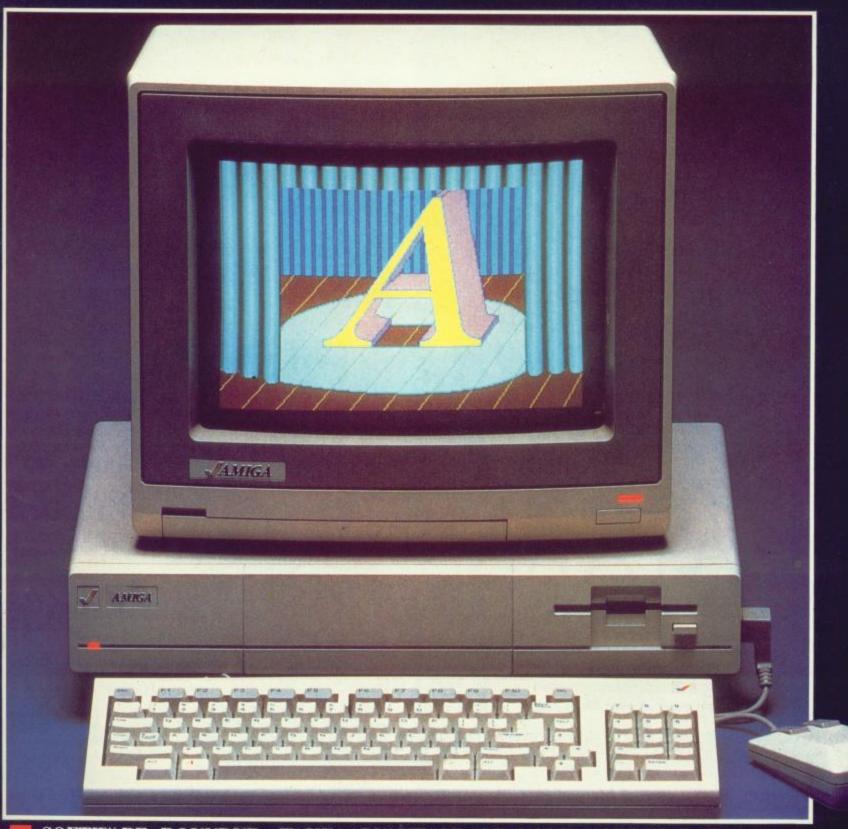
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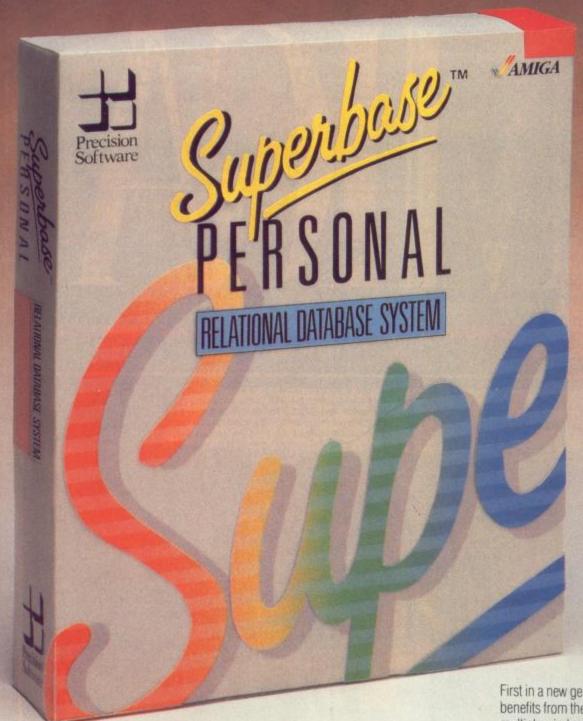
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Your Amiga

Your Amiga makes its debut amongst a rising tide of interest in this range of Commodore 68000 based computers.

Software companies are revelling in the power of the Amiga. Artists and musicians are m aking a name for themselves designing and composing for the new generation of software now being released. Games have taken on a new dimension. No-one is averse to the odd game, especially when they are as good as Marble Madness, The Pawn or Leaderboard.

Programmers will find an unequalled range of software development tools and for the amateur there are public domain utilities, picture shows, instrument samples, an almost overwhelming amount of software. Many have complained about a 'closed machine' and 'no documentation'. They haven't looked. There are official manuals and at least two other major publishers supplying detailed documentation.

The Amiga presents a problem for the serious user: how can something which looks so good be really practical? The answer is in the hardware itself, the interfacing ports for printers, modems, extra storage and memory expansion. Cheap add-on memory is still a twinkle in some engineer's eye but a relentlessly increasing user base will undoubtedly bring it forth.

The software key lies in the friendliest of user interfaces, which, when properly implmented, makes the most complex software, easy to use. And in multitasking, the unique ability of the Amiga to do more than one task at once. What could be more practical, time saving and cost effective than that?

There's much to look forward to. Your Amiga will bring you the news. If there's a particular area of computing with your Amiga you would like covering then drop us a line. We'll do our best.

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American sources have revealed exclusively to *Your Amiga* the plans that Commodore has made for the new generation of Amigas. In essence, two new Amigas will be released to supercede the current A1000. Their working names are, at the moment, the A500 and A2500.

The A500 is Commodore's attempt to break into, and dominate, the Atari ST market. In effect the machine is a cut down version of the current A100, with the same 512K and single 3½" disk drive. To cut costs, and allow Commodore to reach their target of around \$500, the A500 has a greatly reduced power supply, and the Kickstart system disk has been incorporated in a ROM, rather than the current disks. Otherwise the machine is identical to the A500, and will run all the same software.

More important the Commodore, in order to ensure the success of the Amiga, there is the new top of the range A2500. In layman's terms, Commodore has attempted to release an IBM PC style Amiga. It features IMbyte of RAM,

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split into 512K, chip memory, and 512K fast memory. When the individual orders the machine, they will be able to specify what disk set-up they require, which options of $3\frac{1}{2}$ ", $5\frac{3}{4}$ " or hard disk.

The real departure for Commodore is that the A2500 has a very open box design, similar to the PC, allowing for much more expansion. Inside the A2500 are seven expansion slots, five of which are Amiga slots and four are IBM AT (not PC) compatible. As these figures would suggest, two of the slots can be configured either for the Amiga or a PC AT.

In order to allow the Amiga to act either in purely Amiga mode, or as Commodore sees it, in Amiga or PC mode, the Sidecar module has now been sufficiently reduced in size to fit into one of the available expansion slots, not as before in a huge and ugly box.

Although the A2500 will not come equipped with the rumoured 68020 processor, it seems likely this too will be an option, and not at the current price of circa \$2000. Average price for the A2500 is expected to be between \$1500-\$1800, and sources suggest the new specification has been well received by everyone who has seen it, and this bodes well for the Amiga's future.

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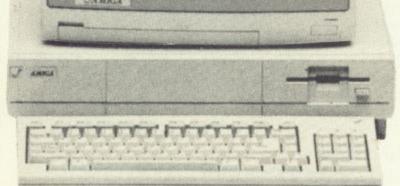
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Amiga Leisure

Not only is the Amiga a useful business tool, it can also greatly enhance your leisure hours.

By Anne Owen

It didn't take a genius to predict that the Amiga would inspire a new generation of games for personal computers. The sound and graphics hardware is begging to be used by designers and programmers. Of course the first batch of games are the offspring of earlier games for the Commodore 64, all improved beyond measure by the superior hardware. We've reviewed One on One, Seven Cities of Gold, Skyfox, Archon 1 and Marble Madness already. Now there's Archon 2, just as good as the original and perhaps a bit too much like it. The strategy has changed, the combat remains the same.

Playscreen

devices

Coming soon... Little Computer People, that weird game which makes you wonder who is watching whom as the computer people go about their lives, now and again tapping on the screen to attract your wandering attention!

Adventure Construction Set from Ariolasoft. Makers of Castles of Apshai and Leaderboard, perhaps US Gold will also bring out Epyx' Rogue.

Infocom adventures, including those Leather Goddesses from Phobos! and the Hitchhikers Guide to the Galaxy, both £24.95.

Firebird has just released Level 9's Jewel of Darkness compilation.

It combines Colossal Adventure, Adventure Quest and Dungeon Adventure. There are over 600 locations, a 1000 word vocabulary and over 600 locations, a 1000 word vocabulary and over 600 illustrations.

You also get one of Rainbird's novella's *The Darkness Rises*, Price £19.95.

The follow up, Silicon Dreams - consisting of Snowball, Return to Eden and Worm in Paradise - is under development.

Something to look forward to in the New Year will be Jeremy Sans' Starglider, already an Atari ST hit.

The Halley Mission is another American game which may make its way to these shores. A variety of flight missions have to be completed by the hyperspacing astronaut. Star maps and docking procedures beg comparisons with Elite but the overall look and aim of the game are sufficiently different to give the authors the benefit of the doubt.

The digitised music recording which fades in and out during play is a great touch and a further indication that games designers are looking to television and video for their inspiration these days.

The Pawn follow up from Magnetic Scrolls will be Guild of Thieves, planned for early 1987.

Activision has launched a game called *Tass Times in Tonetown*, a graphically surreal game. Here's hoping it makes the trip East.

Home Position

Gismoz is a set of 15 desktop accessories which you might like to add to your collection. The cuckoo alarm clock sums up the seriousness of the product and it looks a little overpriced at £44.95.

For those names and addresses

there's MiAmiga File from Haba Systems. Data is held entirely in memory, which makes for speed, and is displayed in a spreadsheet format. Pricey at over £85 however.

Instant Music

These days the more sophisticated buskers who entertain the crowds on the London Underground or Saturday morning shoppers up and down the country, employ technology to help them. Often a recorded backing tape accompanies them as they solo on guitar, saxophone or flute.

Now there is a computer equivalent in Instant Music for the Amiga. Instant Music can act as your backing track as you solo on the instrument of your choice. Instant Music will help you sound good too, masking any lack of real musical skills. And you can swap instruments rapidly. Imagine yourself a busker again, right foot pounding on a bass drum, cymbals strapped to your forearms, strumming a banjo, harmonica at your lips. Instant Music plays tirelessly, although sometimes tiresomely, and lets you sit back and 'jam' with the mouse by moving the cursor up and down the screen (scale) and hitting the mouse button (hitting a key, plucking a string, strumming a chord).

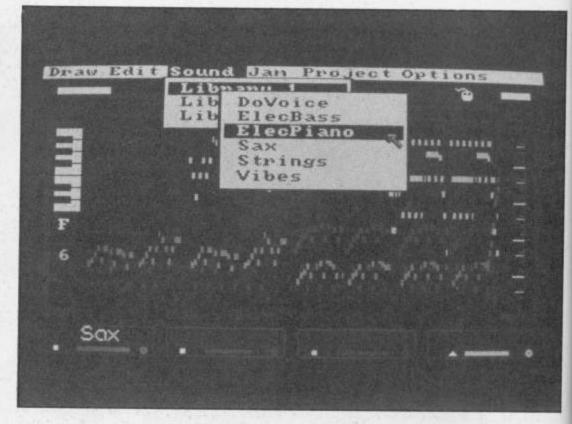
Sequences of notes and chords play back at the press of a mouse button. The music is 'instant' because there are a half dozen boxes on the disk full of preprepared pieces, classical, jazz, rock and folk among them.

There are four instruments in the instant music band and you can take

one over and 'jam' with it. Your efforts will be intelligently incorporated into the tempo and rhythm of the piece (fixed model), controlled according to a setting made at the keypad – two in time with a foot tap, six a rapid triplet sequence etc. – or 'free' jamming – for experienced play-along-a-record musicians.

There's a whole library of instruments to choose from and most of the sounds are veyr realistic. The Amiga's digital to analogue convertors provide for pretty accurate representations of sounds – witness the 'reedy' flute playing in *The Pawn's* introductory sequence. Each instrument can be transposed and the volume subtly controlled with slider switches. The colour representation of the instrument waxes and wanes appropriately with the change in volume.

There's conventional music notation in the tutorial and in the menus for Edit but the music screen contains coloured blocks which represent notes. The duration of the notes is determined by the rhythm track currently active. Optionally an animated piano keyboard can be displayed along with the notes as they are played.



A song may be longer than the screen display. Small sections of a song can be 'magnified' to screen size for editing. Sections can be moved or copied in quite a sophisticated fashion, notes and rhythm, just notes or just rhythm, within the song. Preset

patterns of notes can be drawn on screen with a 'rubber band'.

In all honesty I've only just begun to adventure beyond the 'instant' in *Instant Music*. The sound is stunning and stereo but the examples can wear a little thin. We are hardly into the excellent mini manual so where do we go from here? Or to editing the supplied rhythm templates to gain familiarity and then on to composing your own tunes and learning about music. There is a lot to be learned from the package.

You'd need a broad hat and a very long extension cable but busking with your Amiga isn't beyond the realms of possibility. And it's great at parties.

Other musical packages available are *The Music Studio* from Activision and *Music Craft*. The former apparently allows you to design your own sounds, offer conventional notation on screen and in print and interfaces to MIDI. It certainly sounds like a strong competitor to *Instant Music* at £30.43.

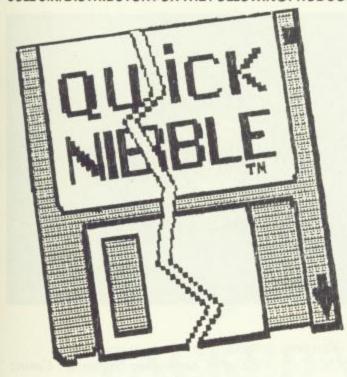
Conversation with a Computer

This is an amusing piece of software from Jenday Software, ideal for the computer beginner. The documenation and software go hand in hand, the main purpose being to introduce Basic in a slightly more friendly way than the manuals. The actual content is a memory test, a battle of numbers and a pegboard game. The games themselves





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"Very highly recommended by me is Conversation With A Computer, from Jenday Software, a set of games and conversation written in Amiga "Basic, and shipped with the source code provided. It is entertaining, amusing, thought provoking, and just plain fun. If you have any interest in programming in BASIC on the Amiga this is a must have for the examples."

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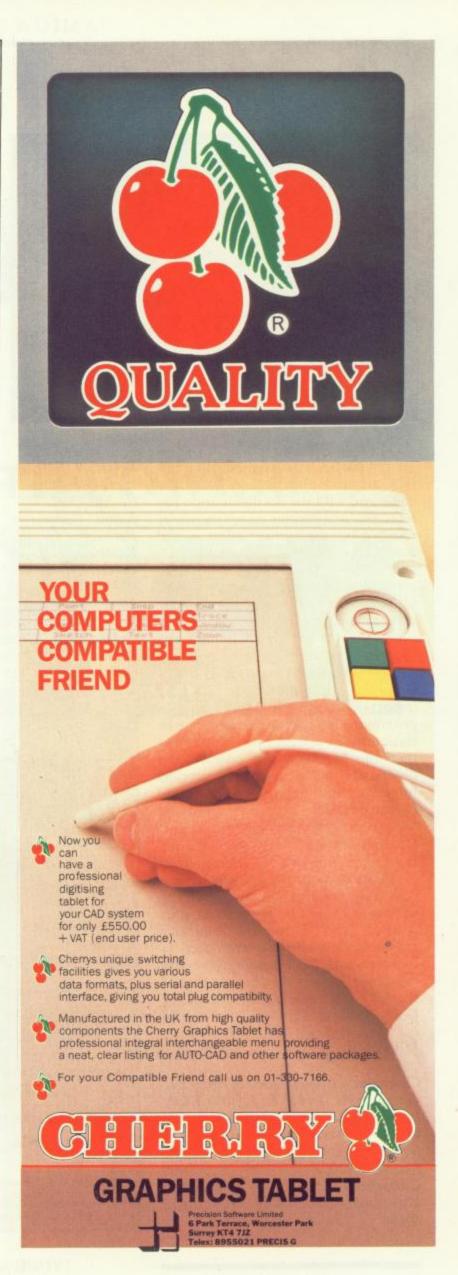
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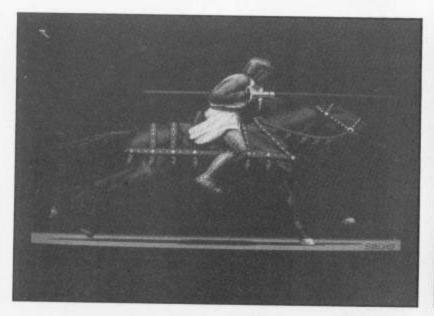
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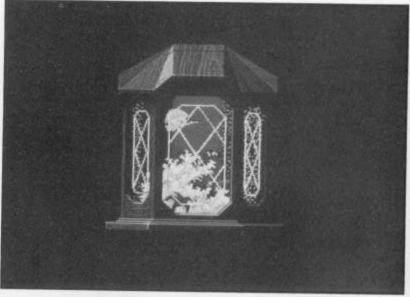


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are not particularly valuable although they are undoubtedly fun, but when combined with the documentation the Basic routines become comprehensible. Completing the conversation – the computer does literally speak to you – will result in an insight into Basic programming. Parts of the code may also be useful material for the amateur programmer.

The whole package is reminiscent of a well-written magazine article but with all the code on a disk ready to run or inspect. Since the C language is so important to the Amiga system, two programs identical in purpose, one in Basic and one in C, are also included so that the beginner can observe the differences in action. This portion includes and introduction to C commands. The execution speeds of the two programs is englightening and C compilers are widely available for the Amiga if this sparks your interest.

Conversation with a Computer is a very laid back and humourous way of getting to know a bit more about your Amiga and I would heartily recommend it to beginners, faced as they are with an incredibly powerful computer. This is the friendly face of the Amiga. It's marketed in the UK by Computatill of Oldham.

Touchline

Cavendish Commodore Centre/UK Amiga Users Group: 66 London Road, Leicester LE2 OQD. Tel: 0533 550 993. Viza Software: Chatham House, 14 New Road, Chatham, Kent ME4 4QR. Tel: 0634 45002.

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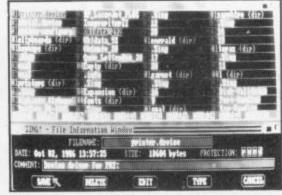
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Amiga Library

More and more products are appearing for the Amiga, we take a look at two books from First Publishing and Precision Software.

By Anne Owen

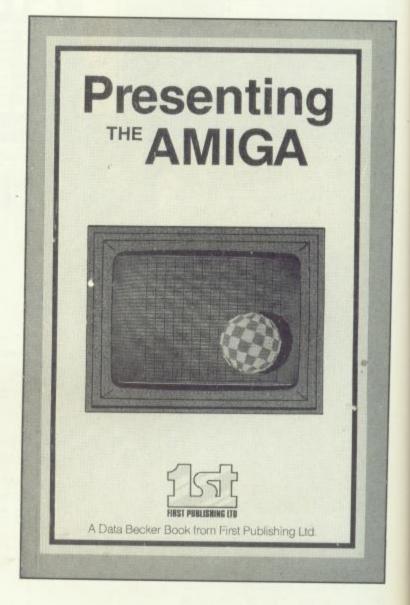
Amiga for Beginners from First Publishing is a book of German descent. Written by Christian Spank, a German magazine contributor, and published by Data Becker, First's parent company. Though typeset, the layout of the book betrays its wordprocessed origins with block paragraphs. The subediting has overlooked a number of typing errors and inconsistencies – reference to illustrations that don't exist, to the "magazine article", german captions on a photograph etc. Nothing of great consequence. The 240+ pages includes a group of colour photographs at the end of the book, all culled from Amiga introductory software and therefore nothing new if you've already got the computer.

Mr Spank intends, in his chatty, joke cracking style – e.g. "This makes it clear that in Basic one can make as many lovely RETURNs as Boris Becker" – to entertain as well as teach and he does both very effectively. The first 90 pages are a solid substitute for the flashier but less informative Amiga manual. The step by step look at Workbench is exhaustive and very useful for the beginner to computing on the Amiga and to Basic and disk operating systems, which is totally in line with how Commodore present the computer to the public.

The fun bits of Basic are covered. Under graphics there are explanations of commands like AREA, AREAFILL, GET and PUT (for moving areas), PALETTE, COLOUR, CIRCLE, PAINT (flood fill) and line.

Animation – an exciting topic for new computer programmers – is covered with looks at the object editor (bobs or sprites) which itself has pen, line, oval, rectangle and eraser to help you design your sprites. We find out how to read sprite data into a Basic program, assigning it to objects, giving priorities, moving in x, y with v (vertically, horizontally and at a specified speed). A simple rocket program is developed to demonstrate these principles.

On the similarly attractive subject of sound and speech there are brief tutorials on SOUND command parameters,



pitch, length and volume and on the SAY command parameters, male/female, human/robot, speed, pitch etc.

The text is occasionally livened by a "tip". There is also a

Problem/Solution appendix for beginners and an icon editor description. The author has used his "beginner" or "guinea pig" to find out what jargon needs explaining to the inexperienced user and this results in an extended glossary, as well as a fairly jargon free text. A list of icons used in Workbench is spoiled because they are too small and indistinguishable from each other in the photographs, the opposite of the reality in which Workbench icon graphics are very detailed, in colour and clear.

The book rightly refuses to resist the temptation of looking at Amiga DOS, the disk operating system upon which the operation of the computer is based. Cleverly the author deals with only those DOS commands which underly the facilities looked at earlier in Workbench sections, functions such as copying, renaming, gathering information about a file, dating a file etc. There are a variety of information sources for program or data files on every DOS disc. For instance you can list files dated since 01 Jan '86 or even type in "list since Thursday". It works!

The OPT command is the limit of the investigation of Amiga DOS. It acts, along with the DIR command, as a sort of disk menu program.

Amiga for Beginners, despite the production faults, pointed out, is a delightfully easy read for the new computer user. It's not going to teach the hacker anything new but then that audience is catered for by the technical manuals. Commodore should have employed Herr Spank to advise on making their documentation as user-delightful as their marvellous user interface.

Touchline

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Company: First Publishing, Unit 20B, Horseshoe Rd, Horseshoe Pk, Pangbourne, Berks.

Tel: 073 575 244 Price: £9.95

AMIGA SYSTEM - AN INTRODUCTION

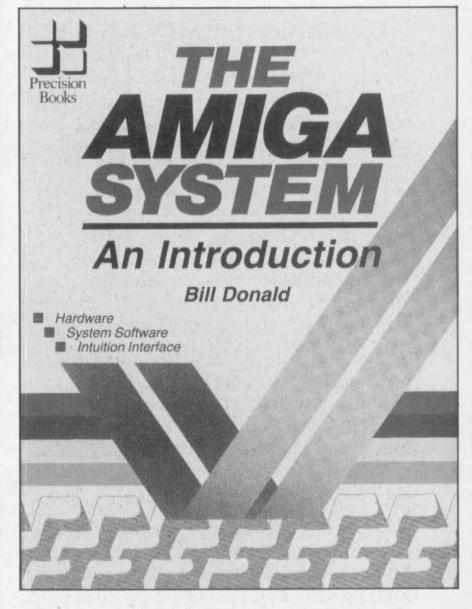
B ill Donald has quickly become the most prolific writer covering the Amiga in magazines and in his first book aimed at the owner and potential purchaser of the computer. He is uncritical of the machine and presents an enthusiast's view, impressed by the "open" nature of the Amiga operating system as well as the obvious graphical and musical capabilities of the machine.

The hardware overview makes it all seem very simple. The 68000, video co-processor and blitter chip are all explained in terms of their place in the architecture.

The specification, we are told, is impressive. The blitter can achieve 10 times the speed of the 68000 alone doing the same fast memory moves. Four low noise digital channels (moving away from the idea of a customised sound chip (offer hi-fi performance. The dynamic memory location (no hard memory maps), circuits (routines to call to perform functions) and the library of overlays, graphics, editors and fonts and disks make up a powerful system.

Graphics is the first major topic, with an explanation of "playfields", how they are constructed, their co-ordinate map, modes, screen memory requirements, colour content, scrolling and "hold and modify". Dual playfields are supported and a "spare" playfield can be independently controlled.

Sprites are naturally part of a Commodore machine. Bit



planes, colouration and the technical aspects of the sprite editor are explained with full examples of complex bit patterns and formulae to design sprites. The registers for system sprite control are listed and there is no attempt to go beyond the system to directly addressing the 68000. Quite rightly since the technical material already presented is heavy going.

The chapter on system control deals with display, collision detection (as used to drive Work Bench), interrupts and direct memory access (for compressor and blitter).

Interfacing covers mouse, joystick and light pen, the hardware and the software registers and routines involved.

Since the Amiga is very much reliant on disk based software, the drives are of great interest. They are controlled by two 8250 control interface adaptors, which can support up to four drives, 3.5" or 5.25". There is no real detail about directly addressing the controller chips but there are registers to achieve format control, a possible means of reading other disk formats, including previous Commodore formats. This could be a method for a business wanting to transfer large data files.



C Compilers, Development Tools

New Lattice Amiga C Compiler

A major new release of Lattice C for the Amiga is now available from Roundhill. Version 3.1 includes an enhanced C compiler, a full macro assembler, and a new, faster and more efficient linker. The library has over 255 functions (over 100 more than standard Amiga C), with many more functions written in assembler for efficiency, faster IEEE floating point routines, support for Amiga FFP floating point, and multitasking support via fork and wait.

The compiler is delivered as a two-disk package with a bootable system disk to simplify installation. A single command line can be used to execute the compiler, linker and librarian (with AmigaDOS wildcard characters).

New compiler features include direct support of memory type specification, custom segment names, and new addressing modes that can help reduce load module size by more than 20%. The linker will support intermixed base-relative and pc-relative addressing modes.

A Professional Developer's Package is also available, which includes the new Compiler, Lattice's LMK make utility, Lattice Text Utilities and Screen Editor, and the Metascope symbolic debugger from Metadigm. Metascope is also available separately.

We can upgrade your existing registered copy of Lattice C to the new version. Please call for full information.

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The keyboard is briefly dealt with. Even the keyboard has its own processor!

This introduction is a fair alternative to the Amiga DOS manual for the beginner. The introductory disk glosses over the DOS and there's much to investigate. The chapter on files and devices is a good guide.

You learn about how the Amiga assigns priorities to multiple processes, how many CLI windows you can open, or have working 'at once'. The hierarchical directory structure of the filing system is looked at, the special characters recognised by the system and the alternative devices which can be made current or specified in the commands: the screen, printer, parallel and serial ports, RAM disk, hard disk, hard disk and other drives.

Special directories on the Work Bench disk supply fonts, overlays for DOS and icons. Drivers written in the C language can be added to the Preferences menu – which 'sets up' the computer automatically. The author gives examples of directory information and of command line syntax.

Next on Mr Donald's list are the system editors, Ed and Edit, text editor and line editor. Both sets of commands ae given in full and the capter acts as a handy reference if you don't have the DOS manual. Edit is a fairly conventional screen editor, half way to a wordprocessor. Edit works only line by line but has delete/replace/insert functions by string or line reference. Separate command files can control editing as well as commands from the keyboard.

Windows and screens are the next topic and a fascinating one it is too. The Amiga has a graphics interface like no other – solid colourful icons and windows with which you can do

amazing things just by clicking on a gadget. I'd have liked to have seen this section earlier in the book. After all, the windows are the first thing you meet. There are four different types available to the programmer, Backdrop, Borderless, SuperBitMap and Gimmezerozero. Gadgets are small icons which activate closing, dragging and sizing windows. The proportional gadget gives you a 'slider' control on screen.

Windows often carry menus. This section details how menu options are 'excluded', lists the command key equivalents of menu options and discusses 'requesters', those windows which sit there patiently until you respond.

The next chapters, on systems software and graphical support, are highly technical overviews of the operating system, how it handles memory allocation, interrupts, I/O and graphics processing – sprites, bobs, text etc.

Technical appendices A to M, a substantial glossary and a diminutive index finish of a book which has gone further than its 'An Introduction' subtitle leads one to expect.

The sheer volume of information in this book makes it good value for the amateur programmer who is hooked or interested in getting the money to become hooked by the Amiga. Although hard going at times because of the bulk of data thrown at you it is a fascinating read. Only on one or two occasions does the author go over the top in his obvious admiration for the machine and we can forgive him that. It's an over the top computer!

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Amiga Roundup

If you own an Amiga or are thinking of acquiring one, you need to know what's available to make the most of its capabilities. We shed light on the matter.

By Anne Owen

Commodore at last launched the Amiga UK in May 1986 we finally discovered the specification and the price: 512K computer, internal 3.5" disk drive, colour monitor. Price: £1450. If you're intending buying an Amiga now then make sure you haggle a bit. The base machine (256K) is on offer at £975+VAT. The upgrade to 512K will cost a further £1000+VAT and an external drive another £200+VAT. Other add-ons start in the over £500 category. So the Amiga is not a cheap computer. It is however unique in a number of ways and software is now starting to come on to the market which exploits this uniqueness.

Is it a business computer? Well, if your business means marketing, advertising, sales literature and the point of sale, as well as planning and personal productivity, then yes, it surely is. If you employ imagination in your business then you'll have no trouble in justifying your Amiga.

In this first Your Amiga, we'll take a look at the range of software now available. There's something for most tastes, from high level languages to arcade games and simple utilities. Some areas, such as graphics, are particularly well supported and new developments are on their way from America. So watch these pages as we bring you up to date with Your Amiga.

Guru Meditation

When the Amiga - dare I say it - crashes, the Guru takes over and gives

you an error code before rebooting the system. Hence the name for our look at programming tools for the Amiga.

Seka Assembler

Kuma's 68000 assembler is accessed via the CLI (command line interpretor) so you will have to enable CLI at the Preference menu. Typing SEKA takes you into the assembler. The Escape key toggles into a full screen editor which supports cut and paste and locate text (once only, hit L for the next occurence).

The commands Kill and Old lose and regain your text and you can interrogate the software on how much memory is left in the buffers. Syntax is standard 68000. There are useful labour saving devices such as pseudo opcodes, like EQUate, macros (which repeat routine sections of code) and conditional assembly (assembly of certain routines only if circumstances require it). A symbolic debugger partners the assembler. You can 'step through' and 'trace' and breakpoints can be set.

Other commands interact with DOS and deal with the assembling and linking of files. AmigaDOS entry points are documented and interaction with AmigaDOS and EXEC libraries explained in the manual, along with some examples to experiment with. If you are planning on starting out with 68000 assembler you will need a 68000 tutorial as well.

Although much of Amiga program development is being done in high level languages, the combination of assembler and monitor in the package makes the *Seka* assembler a handy programming tool for the professional programmer and for the newcomer determined to learn 68000. Price is £69.52.

Languages

AC/FORTRAN, Lattice C, MCC Pascal and Cambridge LISP are amongst the languages commercially available for the Amiga. As a tribute to the development work taking place for the Amiga, there is a near finished version of Modula 2 in the public domain, as well as a Forth and a variety of program editors. A professional editor is Micro Forge's Programmer's Editor (£69.95).

Toolkits

Metacomco has released a programmer's toolkit for the Amiga. Developed by one of the major forces in Amiga software and producers of AmigaDOS itself, the Metacomco toolkit is likely to become one of the most used programming aids for the machine.

Basic

For the average user Basic is the bundled language and should prove a more than adequate implementation. The original *ABasic* has been replaced with a Microsoft *Basic* which uses two windows, one for the listing of the

program and one for the results of the program. There are full cut and paste, cut and move, replicate, single step, trace, stop and continue facilities. The two window scheme allows the user to watch the program output while the part of the listing currently being executed is highlighted. Amiga Basic does not use line numbers. There are a wide range of loop structures such as WHILE...WEND and GOTO is used to jump to a label, the name of routine anywhere in the program.

AmigaDOS

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AmigaDOS is initially hidden away from the Amiga user. It has to be enabled from Preferences – a complete Amiga configuration program – and it can then be entered via the system drawer on the Work Bench or you can create a disk which will go directly into AmigaDOS, opening a window on the screen with the chevron prompt, 1 >, in the top left hand corner.

In AmigaDOS you type a command and its parameters and press the Return key to make it work. If you get it wrong then an error message is reported and you will have to retype. The command 'why' will remind you what went wrong.

There are various commands such as dir, list and info which give details about disks and files. Dir displays a sorted list of files, some of which may be directories themselves containing further files and directories. This hierarchical filing system combines with the ability to use long filenames, to date stamp and to write notes for each file on the disk, makes locating and identifying files very easy.

AmigaDOS deals with devices, floppy disks, parallel and serial ports and RAM disk among others. The devices can be specified in an AmigaDOS command. For instance you can type a text file to the screen (default device) with 'type filename', or to the printer with 'type filename to PRT', or to the serial port with 'type filename to SER'.

Of course the main feature of AmigaDOS is that it is multiprocessing. You type 'newcli', meaning open up a new window with a new command line interpreter into your first window and a second window opens with the prompt 2>. Although the computer is in the process of, say, copying an important directory on to a backup disk in



window one, the window in which you are working is available for typing further commands or even opening another window, 3 > .

Going Public

Bulletin boards are the main means by which public domain software is distributed. Despite the rather odd pinouts of the RS232 port, the Amiga is already a communications machine par excellence. The public domain ·itself contains many terminal programs, some very well implemented and with Kermit and XMODEM transfer. There's also a full Kermit, a communications standard via which data can be taken from another computer and translated into the correct format for the Amiga. OnLine! is a £69.95 commercial product form Precision Software which adds the professional touch to your communications, including support for command-driven autodial modems.

Inexpensive

Public Domain software for the Amiga is an inexpensive means of getting more from your expensive computer. I sent off for, count them, 50 disks full of freeware from American sources. But I only had to send to Cavendish Computers in Leicester.

The set of disks contains some odds and ends and full, up to date sets of two American freeware distributors, the Amicus club and a gentleman called Fred Fish. If you aren't adventuring further than the Workbench then the Fred Fish disks will appear somewhat unfriendly. The Amicus software however is accessible through Workbench and anything more complicated than a demo is well documented. There are also tips and technical articles and reviews to read on screen of printout.

Apart from the immediate entertainment value of pictures digitised with the *Digi-View* frame grabber, a Speech Toy which is much neater than the Workbench demo and numerous instrument sounds, there is a variety of utilities, games and languages.

The utilities include printer drivers, disk menus and memory maps. Some are stunningly useful, others mere trinkets. There's piece of comms software on nearly every disk!

Many take the form of a tutorial e.g. a font designer or a windowing demo. For programmers there is such material to get through and plenty of examples from which to learn.

The games are mainly Basic, card games, a Startrek game, nothing special, and some in the original Abasic and unuseable in *Microsoft Basic. Hack*, on the Fred Fish disks, is a full dungeon and dragons game, low on graphics, high on humour.

Graphics abound on the disk, from 'wallpaper' demos to three dimensional cubes which try and break out of the screen, to professionally

YOUR AMIGA

presented mandelbrot generators. There are also suites of utilities for handling screen graphics, in the standard 1ff format which makes them portable between software packages.

Languages feature fairly strongly with attempts at Lisp and Forth - a pretty professional version - and lots of interest in C, routines, fixes and enhancements for compilers and Unix style additions to AmigaDOS.

I would suggest that the Amicus disks are great value, bringing you right up to date with a year's worth of American material. If you have the time the Fred Fish disks are also interesting - but you'll need to get on with AmigaDOS if you want to use them. It's worth learning since the disks become ever more sophisticated with official demo programs form Aegis Animator and Aegis Draw, a full Mandelbrot investigation program and more and more impressive slide shows dominated by the work of computer aritsts, Jim Sachs, Sheryl Knowles and Jack Haeger.

There are also tutorials, editors, terminals and utilities mixed in. Some of the more complex programs require the setting up of a new disk with elements copied form the library disk, Workbench and Extras. There are full instructions in text files on the disks. The essential AmigaDOS commands to access the programs are:

name of disk/directory > to select drawer dir < names > to inspect files

type Readme to get on-screen instructions.

If you take your own disks along then you pay only duplication cost (and it is only cost). Postage and packing is extra. Media and duplication results in a charge of £34.70 per 10 disks.

Incredible value either way.

User Clubs

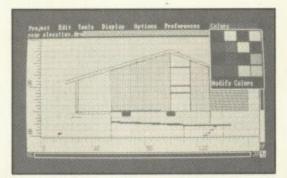
Most important for new Amiga owners however is the source of this public domain software, the UK Amiga Users Group. Based in Leicester, the group is currently producing a bimonthly newsletter. Its links with Leicester's Amiga dealer, Cavendish Computers, mean a 10% discount on a full range of Amiga products. There's also Club 64/Club Amiga. The Irish

based bulletin board was quick off the mark with the Amiga. The club has extensive electronic links with America and has a library of Amiga disks. Its disk based news letters now contain information about the Amiga as well as other Commodore machines.

Art and Crafts

The Amiga's graphics, number of colours, resolution and sheer speed of movement, quickly prompted the view that it could be a low cost graphics workstation with possible applications in the publishing and advertising industries. Commodore UK appointed some eight dealers to directly address this market, Multigraphic of Stevenage, London based CJ Graphic Supplies and Colver Graphic Centre, Bowville-Wright in Maidenhead, Hussey Graphic Centre in Sheffield, Print Art of Bournemouth, Grantems of Blackpool and Gledhills in Bradford.

It is certainly possible to see how the creative department of an advertising agency could use a program such as Aegis Animate to sketch out ideas for a television advertisement and how a page designer could benefit from experimenting with different layouts and sizes of type using Deluxe Paint. The Amiga might even contribute



something to the final product although the tools do not really exist for proper video production or desk top publishing, yet. Cymbol of London is reported to be developing a professional system called Printer's Devil.

At least these users have a wide range of software to choose from. The Aegis range comprises Images, the art package, Draw, the technical drawing software, Impact, the executive slide show, Aegis Animator, the video/animation designer, and Artpak, clip-art for the Aegis

programs. Deluxe Paint and Deluxe Video are the other Aegis programs. The paint programs can be combined with the animate programs resulting in impressive demonstrations for point of sale, window displays etc. Deluxe Paint is still number one in my book, even if it does cost nearly £150. The brush facility, which allows you to pick up any part of the screen and manipulate it, will keep me fascinated for months, if not years, to come. It combines ease of use for the amateur practioner of computer art and control of fine detail for the professional.

Other more specific applications are also likely to find their way on to the Amiga because of its graphics abilities. For instance there is an English company developing a package for driving instruction. The system, Amiga and software, will be sold as a package. Just one example of a so-

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Serious Stuff

Perhaps the most widely used computer software, often bundled with the hardware, is the wordprocessor. Thus far the Amiga is a big disappointment in this area. The Amiga owner can go out now and buy Textcraft, the wordprocessor available form Commodore, with a manual which augments the Work Bench and Basic manuals which come with the machine, or they can wait for the inevitable release of more powerful programs. Scribble! is an alternative already in the country and the other leading contender at the moment is VizaWrite. This is intended to be the start of a desk top publishing system.

The VizaWrite specification for the Amiga looks like this: combination of text and graphics (from other paint programs); support for all fonts; screen display as it will print (bold, subscript, page breaks, headers, footers etc.); ease of use, mouse and pull-down menus; ability to use other programs in multi-tasking environment; multiple documents; mail merge; configuration file, document history window; single keystroke recall of frequently used phrases; support for a variety of

Coming soon... PaperClip from Batteries Included is promised on the Amiga. Mirrorsoft have published specifications for Fleet Street Publisher on the Amiga and it includes

interfacing with powerful typesetting mahcines.

But in the meantime a quick look at Textcraft and what it can and cannot do for you.

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Textcraft is a 60 or 80 column - as you choose - wordprocessor with standard editing, formatting and printing features. It is extremely easy to use and if you don't immediately click with some of the facilities, there is an help screen and a set of one minute tutorials to make things clear. Textcraft is enjoyable to use in most respects, especially the moving and replicating of text and the simple means of changing text styles (bold, italic etc.) and text layout (justified, ragged right, centred etc.). Different text styles and format are displayed within the document. Icons and pull down menus are employed throughout.

When starting a new document in Textcraft, the user can choose from a number of standard layouts for business letter, curriculum vitae, technical documentation etc. Page length, margins, headers, footers and page numbering are all easily edited and the finished page layout displayed diagramatically on screen. The print option brings up a screen of options, including draft and final (NLQ) text, multiple copies, continuous or single sheet.

What is tedious about Texcraft is the file handling. The program takes longer and longer to display the text files on disk as they increase, while you twiddle your thumbs because the program 'takes over' the Amiga and so there is no way out of Textcraft to briefly perform another task. You have to reboot the whole system.

Textcraft has proved itself an adequate wordprocessor and is actually recommended to those who are new to wordprocessing. Users of more sophisticated packages on other machines will soon be frustrated by Textcraft's lack of features.

Business

Other business applications are few and far between at the moment. There's Micro Systems' Analyse!, a standard spreadsheet supporting up to 256 columns by 8192 rows. As well as pull down menus, commands are on function keys for quick entry. It

supports extended functions such as future value, date, standard deviation and variance. More promising is Logistix form Grafox, a powerful spreadsheet, database, and time manager with sophisticated graphics presentation. At a new price of £149 it should attract the attention of the business user.

Another alternative solution to the problem of business software availability is the *Sidecar* IBM compatible co-processor board. This runs IBM software in a window on the Amiga screen. At the time of writing deliveries of the hardware from the factory in Germany had not taken place.

Logistix

Logistix is a power user's package. It is a worksheet upon which the screen acts as a window. The four applications which take place on the worksheet are database, spreadsheet, time management and graphicas. The user makes choices by highlighting menu options but cannot use the mouse and therefore Logistix doesn't present as friendly a face as Workbench.

The Amiga version is not quite converted fully enough to completely gel with the documentation. An Amiga introduction manual would be

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appreciated at the price of £149. It is however a powerful package. Given the appropriate setup period, you could computerise a number of business functions with this software. It is even a little too demanding for the standard memory size of the Amiga. Graphics appear in windows with drawing quite slow, redrawing from scratch when moved within the screen. Less overlaying of the program from disk would be necessary with an uprated tow Mbyte Amiga.

The documentation is exceptionally good with fully worked example files on disk to help you master the software. There is also an exhaustive on screen help facility to remind you of the commands available. The graphics commands can be inserted into the worksheet. They take a number of parameters and can result in sophisticated graphical representation of the user's worksheet.

It's not possible to do Logistix justice in a brief summary. Do not write off the Amiga as a business computer without seeing this software. The business world is now very demanding of the presentation of its facts and figures. The Amiga/Logistix combination is ideally suited to this new role.

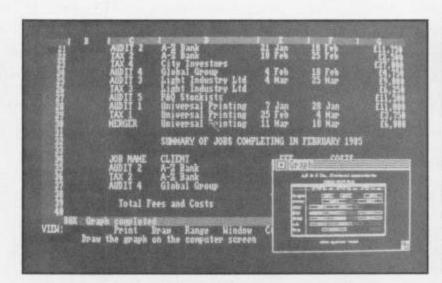
Superbase

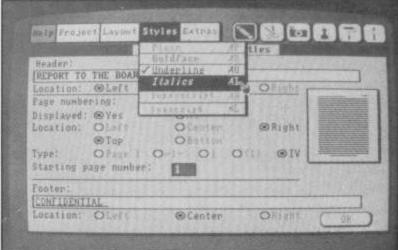
Precision Software has been quick off the mark in producing what is the most poweful Amiga database to date. Superbase is a relational database which can process string, numeric and graphics records. It can process and present them in an astonishing number of ways and it has a user interface which dovetails perfectly with the Amiga system. Superbase has features of Intuition, such as 'ghosting' of nonactive features, menu band and requester boxes. Workbench remains accessible for the activation of other tasks.

There are three screen display styles, record, form and table. The forms can be freely designed, the table fields manoeuvred. The fields on display can be specified from out of the full set of fields (unlimited in number) in a record.

Superbase is a relational database. This means that a file can have connections with another file. In Superbase, this other file is described as an 'external' file. The most interesting example on our demo copy of Superbase is the picture file. A set of records describes the pictures, the title, the paint program from which they originate etc. The related file is that which contains the pictures themselves. When the 'external file' option is chosen, the pictures related to the descriptions are displayed.

Any estate agents reading this? Well imagine the house descriptions, prices, addresses and features in your house record file. Now imagine the related picture file – architect's plans for a new development or a digitised photograph of an older property.





The records themselves can be subjected to various processes, editing, deleting (batch deletions available), duplication – very useful since the most time expensive task in any database is entering data – and sorting.

Each file has associated indices, up to 999 per file are possible. These indices are updated as the data is updated and they provide a very quick 'lookup' facility on those fields that you have chosen to index. The most likely field to index within a customer file, for instance, would be the surname.

More complex searches are carried out with the aid of the 'filter'. A variety of operators, mathematical, logical and string matching, serve to 'zoom in' on the records you wish to work with a filter command line like

County LIKE "Kent" And County LIKE "Lancs"

would result in all those customers with Kent or Lancashire entered into their County field being displayed for further processing.

The printout options are second to none, including printouts of processed records, screen dumps and label printing. You can use import to load files from other systems and export to save data in a viable form for incorporating into other software.

Despite the power of Superbase, only touched on in this summary, the software is extremely easy to use. Everything you need to know is presented on screen. Moving around records is achieved with a set of 12 controls which mimic those of a Video Cassette Recorder with fast forward,

rewind, pause and stop. I didn't dare click on the Eject icon!

Joking aside, Superbase has transformed my opinion of the Amiga's ability to do the database job. The filing system/storage hardware is not the fastest in the world but Superbase appears to operate smoothly, at least with the tens of records in the demonstration files. I hope to build a larger test file to see how it performs with the floppy drives. Superbase is ideally suited to hard disk and is designed to make very large files manageable. With this one proviso on speed with larger files and floppies, I would urge the business user to get a demonstration. The £149 price may to some extent reflect the current sales of the Amiga. It also reflects the very high standards of software design and documentation which Superbase provides.

Expansion Boxes

The first add-on you know about is the memory expansion to 512K. Some games only require 256K but most of the major packages on the market lack important features if 512K is not available to them. Some, like *Logistix*, favour even larger memories and demand that the user go for even more RAM in the form of add-on boards. The 256K to 512K expansion is a painless plug-in exercise and UK machines sold thus far have usually come packaged with the expansion unit.

Micro Forge is the name to look out for in expansion boxes and Precision Software stock these products in this country. The single board adaptor and power supply will set you back over £200. The seven slot expander is £656.95. Once you've got your board, hard disk (20 Megabyted from around £1300), RAM expansion (about £1000 per Megabyte) and stereo sound digitiser can be added. An alternative 2 Megabyte expansion is that of Comspec which connects directly to the Amiga bus expansion port and costs £748.75.

How about a transputer – parallel processor – co-processor for your Amiga? Sophus demonstrated one attached to the Sidecar at an autumn show, so watch this space. Also expect the Amiga itself to be subject to 68010 and 68020 upgrades. These are not vital for normal use of the machine but will allow for even higher performance in certain application areas such as graphics workstations.

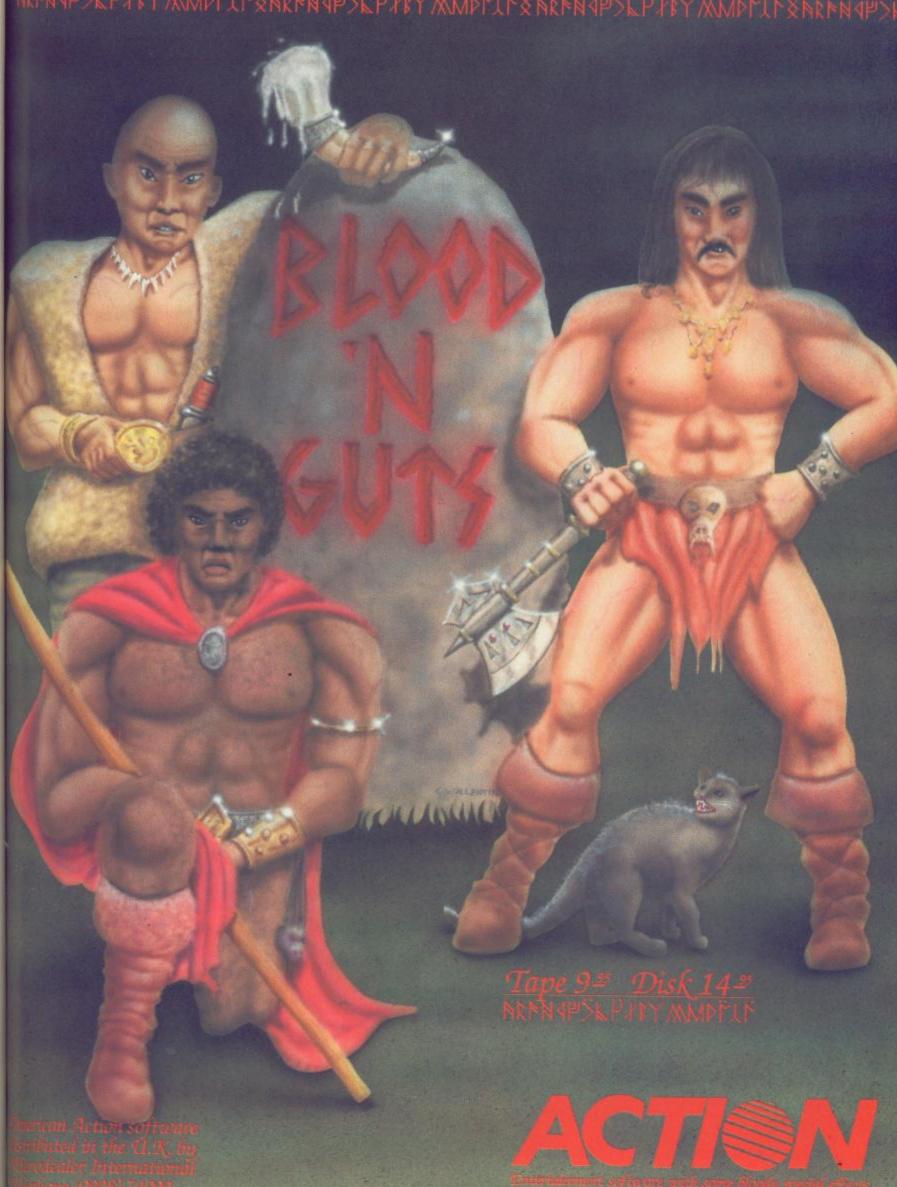
Peripheral Support

A quick look at Preferences - the Amiga configuration panel - indicated the high level of support for printer devices, including Laser. Since the Amiga's colour graphics are a vital feature, a colour printer seems the likely choice for many users. The Epson JX is supported but not recommended. Precision is importing Canon colour ink-jet printers and supplying them with drivers for not much more than £300. The Okimate colour ink jet is a further alternative in this price bracket. Xerox and Mitsubishi printers are being used for more serious applications.

Storage can be extended via an external floppy disk drive (£249) or a hard disk unit. AmigaDOS is eminently suited to the hard disk option with its hierarchical structure.

Blood 'n Guts - An ancient barbarian decathlon with all the violence and brutality you've ever dreamed about in a computer game...

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Amiga Games

The graphics potential of the Amiga gives games designers an irresistible challenge.

We've reviewed some of their latest creations.

By Anne Owen

THE PAWN

The Pawn is the first major adventure for the Amiga in the UK and is a promising start for the genre on a computer with great potential. The opening graphic and stereo music—suitably folky with a reedy flute sound—are signs that the Amiga's unique features are going to be used to the full.

The scenario is bizarre. The Pawn takes place in the kingdom of Kerovnia during a period of social upheavel. King Erik is the man you want to see. He has banished the dwarves who were suspected of the assisination of Queen Jendah II although the real facts have not come to light. The people of Kerovnia are not happy with the situation, a general election is on the horizon and King Erik becomes more unpopular every second and delays a decision on the return of the whiskey making dwarves!

The game screen has four components, description, response, graphic and pull-down menus. The current description is printed at the bottom of the screen, your commands or responses are typed at the cursor, a picture screen can be pulled down, like pulling down a blind, at any time to view. Various options can be set from pull-down menus. These include the size of text, speech on/off – useful if away from the computer for some reason but it slows the game's responses right down – range of description, whether

A Attack
T Thrust
P Panny
F Fire arrow
M Fire hagic arrow
M Hagic Arrow
M

exits are displayed etc. The graphics display can also be turned on/off - the loading of a screen does slow the progress of the game although some of the 30 screens are very pretty.

The game also provides an eloquent set of descriptions of this magical world. Though a little twee for some tastes, the Pawn does succeed overall in casting a spell over the player, drawing him or her ever further into the surroundings and the underlying plot. If it gets too difficult there is a cypheric help feature. By typing in a long code you can get a set of three graded tips for specific locations.

The adventure itself has some interesting characters for you to meet on your quest to see the King of Kerovnia. There are the usual problems to solve in order to make progress geogrpahically. I'd place the difficulty level at medium/hard. The much heralded parser is good, a far cry from the days of noun/verb input. It's not the 'intelligent' parser you might imagine from the publicity but I've seen no better. The ability to hold conversations with other characters through the SAY command and the recognition of synonyms are both strong points in its favour.

All in all The Pawn has done well to drag me away from the more immediately appealing software for the Amiga and set me thinking a bit. There's no denying that the atmosphere of the adventure is established by the 64 page novella, the graphics and the descriptions.

It's a fairytale world, likeable enough and, if you would care to try and attack one of the palace guards, not quite as harmless and passive as it might at first seem. An adventure with hidden depths.

The faultless Rainbird presentation means that you get a prize piece of software for your money, £24.95.

Touchline

Name: The Pawn. Price: £24.95. Machine: Amiga. Supplier: Rainbird. Tel: 01 240 8837.

Originality: 7/10. Graphics: 8/10. Playability: 9/10. Value: 8/10.



LEADER BOARD

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This is by far the best looking golf simulation around in my opinion and a relaxing way to spend an evening out on the course without requiring a fluorescent ball with a radio transmitter embedded in it. As well as enjoying the game challenge, the budding young golfer could learn from Leader Board the important lessons of thinking about his/her shots, using distance charts and concentrating on technique. It is a thoroughly researched and beautifully designed game.

Once you've got the player number(s), name(s), novice/amateur/professional, course options out of the way you are presented with your golfer at the first tee. A window along the right hand side of the screen contains the variables under your control and the course information you need, par, number of shots taken and current overall score. You can click on the up and down arrows to cycle through your set of clubs, no sand wedge or two wood. You have information about how far you are from the hole and in which direction the wind is blowing. The novice need not worry about the wind or indeed anything else. Generously his shot will fly fairly straight whatever the circumstances. The amateur will have to master the 'snap' - a simulation of the action of the wrists on the club at the moment of impact on the ball. This determines the 'hook' or 'slice' on the ball. Let's not be too pessimistic, it might go straight. The professional has to master the 'snap' and judge the wind.

All players have to watch the traps, the bunkers, the water and the trees. In Leaderboard the ball will come rebounding off the trunk of a tree most realistically, right down to the sound. The ball will also clunk comfortingly into the hole. You automatically come on to the green within 64 feet of the flag.

The power of your stroke is determined by the point in the backswing at which you release the held down mouse button. The direction is set by dragging a set of cross hairs to the right position. You will have to take the prevailing slope into account on the greens.

I very much enjoy playing this game. The graphics presentation is very slick, the sound a little thin on the ground. The Leaderboard updates you on your progress after each hole is completed. You can skip holes on a course, jump out of the course entirely, get a bird's eye view of the current hole and practice your driving on the driving range.

When playing with more than one player the use of the mouse is much appreciated. Leaderboard is an all round winner for those who like to test their sports' skills at the computer. Those who like a time trial challenge or shoot'em up might be put off by the gentle pace of golf. They should give Leaderboard a try, it might change their minds.

Touchline

Name: Leader Board. Price: £24.95. Machine: Amiga. Supplier: US Gold. Tel: 021 356 3388.

Originality: 7/10. Graphics: 9/10. Playability: 9/10. Value:

ARCTIC FOX

This is an original for the Amiga and could be described as a ground-level Skyfox. You control a rather unwieldy and slow supertank in a hostile environment. There is lots of colourful instrumentation, a superb display of controls with robot hands reflecting your flexing of the joystick or mouse and arming of weapons from the keyboard.



The three dimensional view of the world outside is nicely depicted but as you pan around it, the movement is jerky. Three dimensional rock formations and other geographical features have to be taken in your stride. A brilliant piece of simulation is achieved when Arctic Fox drives over a large object and the whole screen shakes as the tank bounces back to the ground with a loud thud. The sound of the tank engine rumbling in the background would do justice to any second world war movie.

You guide Arctic Fox around the Antarctic terrain (with its ridges, crevices, mud flats, snow fields, rocks and mountains) in search of alien installations. These include air convertors which are busily converting oxygen into the deadly mix of gases found on the aliens' native planet. The more oxygen left, the longer you have to complete the mission. Arctic Fox is swamped by swirling, agressive fighter planes, shot at by tanks and rocket launchers and tracked by floating mines. The mission is to disable your opponents by knocking out communications forts and finally winning the battle by destroying the main fort – which is very heavily defended.

Fortunately the game offers a number of playing options which can vary the difficulty from game to game. In training mode for instance you can make Arctic Fox indestructible, render your tank invisible, start/stop blizzard, smart bomb aliens in your sector etc. This is a 'pre-game' level. In the game itself there are beginner and tournament levels. At tournament level the odds are further stacked against you. You select from eight predetermined starting points and enemy configuration. The keyboard controls guided missiles, mine laying, rear view, dig in, cannon inclination, relative rverse and big screen missile.

Although exciting for the first hour of play, I'm unsure of Arctic Fox's ability to last as an interesting game for longer periods. I'm returning to it when I fancy a good cathartic punch up. Others may find the complex controls and fighting scenario a more interesting challenge. It's an impressively presented game, no doubt about that.

Touchline

Name: Arctic Fox. Price: £29.95. Machine: Amiga. Supplier: Ariolasoft. Tel: 01 836 3411.

Originality: 6/10. Graphics: 8/10. Playability: 7/10. Value: 7/10.

CASTLES OF APSHAI

This fantasy graphic adventure is a must for the convinced role-playing fanatic and worth a look for anyone who likes a good game and a challenge. There's a lot of exploring and mapping to be done before you can say that you have really played Castle of Apshai.

You begin the game by building your own character from scratch or accepting attributes automatically assigned for you. These include strength, agility, intelligence etc. Characters can be saved and reloaded. After completing your bargaining with the innkeeper for armour, sword, bow,

arrows and healing potions, it's off to the Castles of Apshai, the Upper Reaches of Apshai or the Curse of Ra. There are 12 levels of mazes and nearly 600 rooms.

The play screen consists of two windows, a display of the room you are currently in and a display of your current state of health. You can explore it for traps and secret doors. Any creatures in the room will make themselves known to you! You can move away diplomatically, try and talk them out of it or you can chance your arm and fight, losing strength in the process and possibly meeting a grim end at the hands of some weird creature.

Castles of Apshai makes good use of the Amiga's mouse and pull-down windows but this is not suitable for the speed sometimes needed to fend off a monster or run away. Play is usually carried out with one hand on the keyboard, the other on the mouse. You just click on the spot in the room to which your character should move. You can save your game position and retrieve it and so live to fight again and, hopefully, not repeat your mistakes.

Most rooms have some object to inspect, some more mysterious than others. Some prove to be just trash, others clothing, another sword perhaps or gold or some form of strength giving food. Objects can be picked up or discarded.

The 80 page booklet on the lore of Apshai – the lost culture beneath the Sahara – contains a story, advice on how to survive and full references to locations and objects to be found in the games.

If you like to explore and map a game then Apshai is three in one value for money. You'll need plenty of 'leisure time' to crack it.

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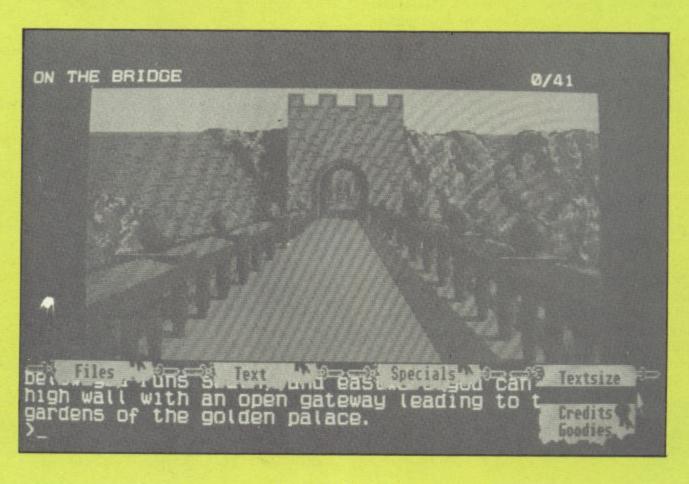
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Touchline

Name: Castles of Apshai. Price: £24.95. Machine: Amiga. Supplier: US Gold. Tet: 021 356 3388.

Originality: 7/10. Graphics: 6/10. Playability: 7/10. Value: 7/10.



X-Ray Files

Take a peek inside your 1541 and find out more about what's going on with our X-ray program.

By Paul Eves

sers of the 1541 Disk Drive know already the advantages of this form of medium over the Cassette. Although the speed of the drive is something to be improved upon. (Although this is not the 1541's fault, but the operating system of the 64). However, not everyone uses their 1541 to its full potential. Indeed, most users of the 1541 don't know how the drive can be put to work for their own advantage. The program File X-ray sets out to show you that with a little thought on your part, you can make programming the drive a pleasure and advantageous thing to do.

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When you load the directory up, all it tells you is the name of the file and how many blocks it is, along with the program type. There are however, a few more bits and pieces of information stored in the Directory. Things like the starting address of a file. These other bits of information are known as the 'File Parameters' of a program. By understanding the make up of the directory better, these parameters can be easily found and printed to the screen or printer.

Finding Parameters

In total there are nine that we can unearth. They are:

- 1. File Closed?
- 2. File Protected?
- 3. Blocks Allocated
- 4. Side sector blocks (Relative files)
- 5. Data blocks (Relative files)
- 6. Records (Relative files)
- 7. Start Address (Program files)
- 8. Free blocks on disk
- 9. Allocated blocks on disk

The following program demonstrates how we find this information and then prints it to the screen of the 64 or to the printer.

Firstly, I have listed the variables

used within the program, following this is the program breakdown. You should have no trouble following what's going on. The REMs may be omitted and of course you can alter the layout to suit your own personal taste.

Owners of the Vic can run the program by changing lines 16 and 17 (Screen colour set up).

Variables

RE - Track of the file entry in the directory

SE - Sector of the file entry in the directory

AF - Lower 4 bits of file type (contains the actual file type)

LO - Low byte of the start address

HI - High byte of the start address *TP - File type of requested file

NF - Not found flag if required. File on disk does not exist (set if not found)

BK - Number of blocks of file

FA - File address of program file (the start address)

LE - Length of record for relative file DB - Track of Data Block of program file (contains start address)

DF - Sector of 1st data block of program file

FB - Free blocks on disk

AB - Allocated blocks on disk

SB - Side sectors in relative file

RF - Records in relative file

N\$ - Name of requested file

FN\$ - Directory file name

TY\$ - File type

XX\$ - Shows a closed or open file

SE\$ - Shows a secure file or non secure (i.e. protected)

Program Breakdown

LINES

16 - 17 Set screen and border colours. Set eursor colour. Disable the LIST function. Disable SHIFT key. Disable RUN/STOP RESTORE. Clear screen.

18 Blank the screen.

19 - 25 Puts title screen up.

26 Switches screen back on.

27 -32 Asks if directory is to be listed. Sets NF, reads directory and returns.

33 Requests name of required file.
 35 - 68 Directory read routine. Flags

an error (NF) if required file not found.

78 - 81 Reads file type entry (byte zero)

and stores in TP. The lower 4 bits are stored in AF.

82 - 87 Checks file type and stores

82 - 87 Checks file type and stores string in TY\$.

88 - 89 Reads bit 7 of file type byte and stores in XX\$ (File closed bit).

90 – 91 Reads bit 6 of file type byte and stores in SE\$ (File secure bit).

92 - 97 Reads bytes 28 and 29 of file entry and stores in BK.

98 - 102 If relative file, length of record is read from byte 21 and stored in LE.
103 - 116 Calculates the starting

address in program file.

117 - 126 Calculates number of free

blocks on disk.

127 - 128 Calculates side sector blocks of a relative file from LE and RF.

129 - 157 The results can now be printed either to the screen or printer.

158 - 164 Asks if another file is required.

165 - 168 Sub routines for switching screen off and on.

As it stands, the program is functional and stands alone. However, you may wish to include it as a sub-routine of a larger utility package. This can be achieved without too much trouble. You may try modifying the directory read section so that the directory is printed across the screen in two columns, instead of down the screen. Or, one which I like, is to put a four line window across the top of the screen so as not to spoil the screen layout.

PR	OGRAM: XRAY FILE				
85	O REM **************	40	53 FORZ-0T015		118 FB=0
	1 REM ** FILE XRAY PROGRAM *	40	54 GET#2, KS: IFKS=""THENKS=CH	200000000000000000000000000000000000000	118 FORJ-4T0140STEP4 120 1FJ-72THEN124
HA	REN TO FILE ARMI PROGRAM	35	R\$(0) SS IFASC(K\$)=160THENS8		121 PRINT#15, "B-P"; 2; J
10	2 REM ** COPYRIGHT (C)1986 *	70	56 NAS-NAS+KS	D1	122 GET#2, KS: IFKS=""THENKS
			57 NEXTZ		HRS(O)
40	3 REM ** ESP ENTERPRISES *	59	58 IFNS-NASTHENER		123 FB=ASC(X\$)+FB 124 NEXIJ
DC	4 REM ** PROGRAMMED BY *	79	59 IFNFIHENPRINTNAS 60 NEXTI		125 AB=664-FB
			61 IFTR-OTHEN63	DB	126 IFAF<>4THEN137
18	5 REM ** PAUL A EVES *	DF	62 601044	6F	127 SB-BK/121: IFSB<> INT(SI
	-	EF	63 CLOSES: CLOSE15	un	HENSB=INT(SB+1) 128 RF=INT(((BK-SB)*256)/I
F	6 REM ***********************************		65 IFNF-OTHENPRINT"CDOWN3, C3	48	
8	7 REM	D/	, COB, DOWN, LEFTB, RUSONJERROR.	SE	129 REH ***********************************
7	8 REM		CRUSOFF) CGREENING SUCH F		
C	9 REM ***********************************		ILE!!!"	CF	130 REM ** ASKS FOR DUTPU
-	AS DEM SE DICORIE DUNIETOD	44	66 PRINT"[WHITE, DOWN5, SPC10]		131 REM ** METHOD. SCREEN
2	10 REM ** DISABLE RUN/STOP-	un	ANY KEY TO CONTINUE" 67 WAIT198, 1: POKE198, 0: RUN	53	131 KEN HETROD. BUREEN
F	11 REM ** RESTORE AND LIST	4D 8C	68 IFNFTHENRETURN	EO	132 REM ** DR PRINTERJ AN
	••	CA	69 REM		
C	12 REM ** SET BORDER/SCREEN	C9	70 REM	71	133 REM ** DISPLAYS INFO
		90	71 REM ***********************************	-	134 REM ***********************************
5	13 REM **COLOURS AND DISPLAY	B7	72 REM **READS AND STORES**	D1	131 KLII
F	14 REM ** HAIN TITLES		73 REM ** PARAMETERS OF ** 74 REM ** REGUIRED FILE **	08	135 REM
-	17 REN INHIN IIILES	96 50	75 REM ***********************************	07	135 REM
6	15 REM ***********************************	C3	76 REM	CS	137 PRINT"CCLR, GREENJOUTP
		CS	77 REM		TO CCWHITEJSCGREENJCREENJ
5	16 CLR: PRINICHRS(142); CHRS(8		78 PRINT#15, "B-P"; 2; I*32+2	DE	CCWHITE)PCGREENJRINTERJ 138 GETKS: IFKS<>"5"ANDKS<
-):POKE792,193:POKE808,234	BO	79 GET#2, KS: IFKS-""THENKS-CH	DE.	"THEN138
3	17 POKE53280,0:POKE53281,0:P OKE646,14:PRINT"(CLR3";	14	R\$(0) 80 TP-ASC(K\$)	84	139 IFKS="S"THENOPEN1, 3:P
B	18 GDSUB165	58	B1 AF-TPAND15		T#1, CHR\$(147): GGSUB165
	19 PRINT"CDOWN, SPCB, CYANJESP	BD	B2 IFAF-OTHENTYS-"DELETED"		140 IFKS="P"THENOPEN1,4
	ENTERPRISES PRESENTS"	13	83 IFAF-1THENTYS-"SEQUENTIAL	66	141 PRINT#1, "CSPC3)PROGRA
A	20 PRINT"CDOWN2, SPC6, C73 FIL	13/22	" " " " " " " " " " " " " "	F7	AME:[SPC7]";NS 142 PRINT#1:PRINT#1:PRINT
	E X-RAY DISPLAY PROGRAM"	DE	84 IFAF-ZIMENTYS-"PROGRAM" 85 IFAF-3IHENTYS-"USER"	OA	143 PRINT#1, "CSPC7)-: PROG
	21 PRINT"(SPC7,CT26)" 22 PRINT"(SPC3,C3)(FOR COMMO		BE IFAF-4THENTYS-"RELATIVE"		PARAMETERS: -"
0	DORE 64 PLUS 1541 DRIVEJ"		87 IFAF> THENPRINT"CC3, C08, D	AA	144 PRINT#1:PRINT#1
8	23 PRINT"CC7, DOWNS, SPC9JAUTH	1000	OWN, LEFTE, RUSONJERROR CRUS	7D	145 PRINT#1, "CSPC3JTYPE O
	OR: (SPC3, YELLOW) PAUL A. EVES	1900	OFF, GREEN) FILE TYPE NOT REC	-	ILE: CSPC113"; TYS
200	" DEVELOPE DOUBLE COCCUTETE		OGNISED!!!":GOTOGG	OL	146 PRINT#1, "CSPC3)FILE C ED: CSPC123"; XXS
B	PRINT"CC7, DOWNS, SPC9JTELE PHONE: [YELLOW][04427] 6319"	CB	88 IFTPAND128THENXXS-"YES": 6	CF	147 PRINI#1, "ESPC33FILE P
H	25 PRINT"[WHITE, DOWNS, SPE11]	36	89 XXS="NO"		ECTED: CSPC91"; SES
-	ANY KEY TO CONTINUECGREENS"	D4	90 IFTPANDGYTHENSES="YES": GO	SD	148 PRINT#1, "[SPC3]NUMBER
15	26 GOSUB167		1092		BLOCKS: ESPC63"; BK
5	27 WAIT198,1: POKE198,0		91 SES="NO"		149 IFAF<>4THEN154 150 PRINT#1, "ESPC3]RECORD
5	28 PRINT"CCLR, DOWNILIST DIRE	EA	92 PRINT#15, "B-P"2, I*32+30	EL	NGTH: ESPC9]"; LE
	CTORY:-CSPC3)CCWHITEJYCGREEN JESJ CCWHITEJNCGREENJOJ OR C	7E	93 GET#2, KS: IFKS=""THENKS=CH	CO	151 PRINT#1, "CSPC33SIDE-S
	CWHITEJECGREENINDI?"	01	R\$(0) 94 LO-ASC(K\$)	1	OR BLOCKS: CSPC41"; SB
3	29 GETKS: IFKS<> "Y"ANDKS<> "N"	CO	95 GET#2, KS: IFKS-"THENKS-CH	68	152 PRINT#1, "[SPC3]DATA B
7	ANDKS<> "E"THEN29		R\$(0)	-	KS:[SPC11]";BK-SB
2	30 IFKS="Y"THENNF=1:GOSUB42	F 173 (177 C)	96 HI-ASC(K\$)*256	01	153 PRINT#1, "ESPC3)RECORD SPC15]"; RF
D	31 IFKS-"E"THENPRINT"[CLR]":	100000000000000000000000000000000000000	97 BK-LO+HI	10	154 IFAF-2THENPRINT#1, "CS
16	32 NF-0		99 PRINT#15, "B-P"; 2; I*32+23	3 53 3 3	JSTART ADDRESS! [SPC9]"; FA
E	33 INPUT"COOWNIREQUIRED FILE		100 GET#2, KS: IFKS-""THENKS-C	85	155 PRINT#1, "CSPC3JBLOCKS
	:-";NS	- Corn	HRS(O)	-	AILABLEIDISKI: ";FB
4	34 IFLEN(NS)>16THENNS=LEFTS(101 LE-ASC(KS)	70	156 PRINT#1, "ESPC33BLOCKS LOCATEDEDISK3: "; AB: PRINT#
-	NS, 16)		102 IFAF(>2THEN117	Manager St.	RINT#1: PRINT#1
	35 REM 36 REM		103 PRINT#15, "B-P"; 2; I*32+3 104 GEI#2, KS: IFKS-""IMENKS-C	SE	157 CLOSE1
BA	37 REM ***********************************	47	HRS(O)		158 PRINT"CDDWN3, GREEN, SP
0	38 REM ** READ DIRECTORY **		105 DB-ASC(KS)	11 -33 -31	RE-RUN PROGRAM CEWHITETYE
0	39 REM ***********************************		106 GET#2, KS: IFKS-""THENKS-C	B BB	ENJEST OR COWHITEINCGREEN
7	40 REM	-	HRS(O)	AC	? 159 GOSUB167
6	41 REM 42 OPENIS, B. 15, "IO": DPENZ, B.		107 DF-ASC(KS) 108 DPEN3,8,3,"#"		160 CLOSE2: CLOSE15
-	2,"#"	OF	108 PRINT#15, "B-R"; 3; 0; DB; DF		161 GETKS: IFKS=""THEN161
9	43 TR=18:SE=1	188		BB	162 IFKS="Y"THENGOTOO
15	44 PRINT#15, "B-R"; 2; 0; TR; SE		110 PRINT#15, "B-P"; 3; 2	EA	163 IFKS-"N"THENPRINT"CCL
4		68	111 GET#3, KS: IFKS=""THENKS=C	99	: END 164 GOTO161
5	46 GET#2, KS: IFKS=""THENKS=CH	ne.	HR\$(0)	C4	165 POKES3265, PEEK(53265)
:5	RS(O) 47 TR-ASC(KS)		112 LO-ASC(KS) 113 GET#3, KS: IFKS=""THENKS=C	4.5	239
F	48 GET#2, KS: IFKS=""THENKS=CH	03	HRS(O)	58	166 RETURN
98	R\$(0)	SE	114 HI-ASC(KS)*256	AC	167 POKES3265, PEEK (53265)
13	49 SE-ASC(KS)	BA	115 FA-LO+HI	300	5
1	50 FORI-0107		116 CLOSE3	56	168 RETURN
20	51 PRINT#15, "B-P"; 2; I*32+5	03	117 PRINI#15, "B-R"; 2; 0; 18; 0		

Nursery Rhyme Land

This month we bring you a column with a difference – an adventure specially written for young children with educational aims.

By Margaret and Allen Webb

n writing this adventure, we decided that it was 'put your money where your mouth is' time.

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In monthly articles to date. I have been looking critically at available software and saying how they can help or hinder your child's education. I have also said that some of the programs I have seen could have been enhanced by a little thought before and during programming. This means that before any work begins at the computer, the educational aims of the program must be clearly established. The questions to be asked are:

1) What do we want to teach? This could be straight forward facts such as spelling, tables, mathematics. Or we might want to teach or develop general skills such as lateral thought and reasoning. If done well, the child need not even realise that he is being taught!

2) How are you going to present the information? It could be an arcade game, structured text or straight facts with performance testing. The range is wide. This decision is crucial and will probably need the direct input of a teacher or educationalist.

3) How can the information be effecively delivered? This is the realm of the programmer whose task is to use the full capabilities of the computer to give an attractive and stimulating program.

In summary, it is important for software houses to realise that good educational software needs the input from a number of people working in a team.

Our program

Nursery Rhyme Land is a game aimed at introducing the young user to adventures. It can be used by the early junior age child on his own but is probably best used with the help and interaction of a parent to provide help with the reading and to ask questions or give hints. The game uses well known nursery rhyme characters and the plot is related to things that happen in the rhymes. This helps test the child's knowledge and understanding of nursery rhymes.

There is no direct factual learning with this adventure, but it does test a number of skills, including reading practice, nursery rhymes, mapping and using the cardinal points of the compass, problem solving and communication skills.

My six year old loved it. He can read for himself and found it easy to make decisions as to where to go and what to do. When he had finished, he found his nursery rhyme book and reread the relevant rhymes.

I don't claim the game to be perfect, but it does contain a number of what I believe to be important features.

Entering the Program

The typing in of the adventure is rather a labour of love and you should consider buying the compilation tape or disk. The code is in two halves:

The main object code occupying locations 32000 to 40710. The picture block occupying locations 8192 to 17176.

We'll cover the object code this month and the picture block next month.

The main control section of the adventure is the small Basic code given in Listing 1. This loader assumes that the object code is stored with the name

YOUR COMMODORE february 1987

"OBJECT" and the picture block is saved as "PICTURE BLOCK".

You can play the adventure without pictures by replacing line 20 in LISTING 1 with:

20 POKE 16384, 96:A=4

This will enable you to play the game before you type in next month's portion.

Commencing Play

The game uses single key inputs throughout. This eliminates unnecessary complications for the younger child. The commands are:
1) N,E,S,W,U,D to move in any

2) G to get an object. When G is pressed, a menu of the objects available for getting is listed. The required object is taken by pressing the appropriate number key. You may carry a maximum of four objects. If you are carrying four objects, the G command will not do anything.

3) L to leave an object. This time, a menu of the objects carried out displayed. Again, you select the object to leave by pressing the relevant number key.

4) Q will leave the program and offer game Save/Load options or help. The

help command will return you to the game at the same place that you left it.

Object of the Game

The aim of the game is to locate Bo Peep's sheep which have been stolen by a nasty witch. To find them, you must obtain certain objects. Some can be found simply by exploring, others can only be obtained by helping people. All interactions are handled automatically. If, for example, you were to meet Simple Simon and you were carrying a penny, something would happen.

That's all the help you get, the rest is up to you or your children.

PROGRAM: LISTING 1 EK(SA+15+I): NEXT 1 REM***** 530 PRINT"CDOWN, SPC11, YELLOW 250 SYS32016 53 270 601090 RUSONIDERUSOFF, CO, SPC31TO M 2 REM*LISTING 1 280 SA=12*4095 DUE DOWN' 540 PRINT"CDOWN, SPC11, YELLOW , RUSONJUCRUSOFF, CB, SPC3)TO M 290 POKESA, PEEK(830) 300 POKESA+1, PEEK(872) 310 FORI-0TO13: POKESA+2+I, PE EK(38797+I): NEXT 3 REM*NURSERY RHYME LAND BOD QUE UP 44 4 REM*A + M 1985 12 550 GOSUB 700 5 REM****** 320 FORI-0TO9: POKESA+16+1, PE 84 560 PRINT"CCLR, CBJPRESS CRUS TX3M: (1+8588E) X3 ON, YELLOWIGERUSOFF, COJ TO GE T AN OBJECT" 570 PRINT"[DDWN]IF THERE ARE OBJECTS YOU CAN TAKE, YOU WILL BE GIVEN A LIST." 580 PRINT"[DDWN]TO TAKE AN O BJECT, PRESS THE NUMBER OF IT IN THE LIST." 590 PRINT"[DDWN]FOR EXAMPLE, IF YOU ARE AT A LOCATIONISP 10 IFA-OTHEN POKESS, 32:CLR 330 SA-SA: FA-SA+26: GOSUB350 20 A-A+1: IFA-1THENGOSUB400: A 340 601080 350 POKE194, SA/255: POKE193, S A-PEEK(194)*256 30 IFA-2THENLOAT"OBJECT", 8,1 360 POKE175, FA/256: POKE174, F A-PEEK(175) = 256 370 L-LEN(FIS) 40 IFA-3THENLOAT "PICTURE BLO SB CK",8,1 50 IFA=STHENLDATFIS,DE,1 380 FORI=ITOL: POKE1023+I, ASC (MID\$(FI\$,I,1)):NEXT 390 POKE 187,0:POKE188,4:POK 60 IFA=6THEN210 IF YOU ARE AT A LOCATIONESP C33WITH A GUN AND A BOX", 500 PRINT" PRESENT, YOU WILL BET THE LIST: " 70 IFA-4THENGOSUB470 37 E183, L: POKE186, DE: SYS62954: R 80 SYS32000 83 90 PRINT"LCLR, CBJDD YOU WANT 400 POKE53280,0:POKE53281,0 410 PRINT"[CLR,DOWN6]"TAB(12 TO SAVE OR LOAD A GAME ORES PC3]HAVE HELP": POKE53259, 0 100 INPUT "CRUSON]YESCRUSOFF 1 OR CRUSON]NOCRUSOFF] OR CR 610 PRINT"COOWN, SPC1211. GUN) "[YELLOW] NURSERY-RHYME LAND 620 PRINT"CSPC1212. EB 630 PRINT"CDOWN23YOU JUST PR USONJHELPERUSOFFJ"; IS 110 IFLEFTS(IS,1)="N"THENEND 420 PRINT"CDOWN33"TAB(8)"CCY ESS ERUSON, YELLOW) LECS, RUSOF F1 TO TAKE THE GUN OR ERUSON , YELLOW) ZERVSOFF, CB1 TOTAKE ANJAN ADVENTURE FOR CHILDREN HW3" (E)BAT" [SNWODD" INING 120 IFLEFTS(IS, 1)="H"THENGOS THE BOX ITEJBAME CONCEPT AND DESIGN" UB470:GOTO260 640 GOSUB700 INPUT "CCLR, RUSON) SAVEER 650 PRINT"CCB, CLR3TO DROP ON 440 PRINT"CDOWN)"TAB(12)"BY USDFF1 OR ERUSONILDADERUSOFF AB D OBJECT PRESS CRUSON, YELLOW DLIRUSOFF, CBJ. YOU WILL BE G IVEN A LIST OF THE"; 650 PRINT" THINGS YOU MAY DR MARGARET WEBE]"; IS: AS=LEFTS(IS, 1 450 PRINT"[DOWN2]"TAB(9)"[GR ØE 140 IFAS<> "S"ANDAS<> "L"THEN1 EENJPROGRAMMED BY ALLEN WEBB 150 INPUT"ECLRIFILE NAME"; FI DP: 450 RETURN 470 PRINT"CCB,CLRJALL COMMAN DS USE SINGLE KEY PRESSES." 480 PRINT"CDUNASTO MOVE IN 670 PRINT"[DOWN]YOU THEN PRE SS THE NUMBER OF THE OBJECT YOU WANT TO DROP.CDOWN)" BA 13 160 INPUT "CRUSONIDISK DRIVE CRUSOFF) OR CRUSONICASSETTE 680 PRINT"PRESS CRUSON, YELLO WIGCRUSOFF, C81 TO LEAVE THE GAME OR TO SAVE OR LOAD A SA DECKERUSON3"; DES: DS=LEFTS(DE ANY DIRECTIONS YOU USE: 490 PRINT"CDOWN, SPC11, YELLOW 170 IFDS<> "D"ANDDS<> "C"THEN1 9F RUSONINCRUSOFF, CO, SPC3)TO M ME OR FOR HELP 50 180 DE=8:IFDS="C"THENDE=1 190 IFAS="S"THEN280 QUE NORTH' 590 GOSUB700 : PETURN 80 500 PRINT"COOWN, SPC11, YELLOW 700 PRINT"CDOWNZ, SPC7, RUSON, C11 PRESS ANY KEY TO CONTINUE 58 RUSONJECRUSOFF, CB, SPC3JTO H 200 A=5:GOTO50 CS 210 SA-12*4096 510 PRINT"CDOWN, SPC11, YELLOW 710 GETIS: IFIS=""THEN710 220 POKEB30, PEEK(SA) , RUSON)SCRUSOFF, CB, SPC3)TO M 720 RETURN 230 POKEB72, PEEK(SA+1) OVE SOUTH 240 FORI-0T013: POKE39797+1, P EEK(SA+2+1): NEXT 520 PRINT"CDOWN, SPC11, YELLOW , RUSONJWCRUSOFF, CB, SPC3]TO M READY. 250 FORI-0109: POKE39826+1, PE BB

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PROGRAMS

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Action Replay is under constant development to stay on top of latest releases. No other product will cope with as much software as Action

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****WARNING***
Action Replay is designed for the user to make backups for their own use — Datel does not cond

FOR C64/128 ONLY £24.99 POST FREE

 Stop the action of your game and make a complete backup to Tape or Disk

· Action replay works by taking a 'snapshot' of the program in memory so it doesn't matter how the game was loaded - at normal or high speed from Tape or Disk.

Just look at the features, no other unit can offer such value.

□ TAPE TO TAPE □ TAPE TO DISK □ DISK TO DISK ☐ DISK TO TAPE ☐ ALL BACKUPS WILL RELOAD AT TURBO SPEED AND RUN INDEPENDENTLY OF THE CARTRIDGE □ SPECIAL COMPACTING TECHNIQUES TO SAVE ON DISK SPACE.

UNIQUE CODE INSPECTOR FEATURE Stop the action with the button then inspect any area of memory in it's "Frozen" state including all VIC + SID REGISTERS ETC.

SO SIMPLE TO USE. Just load your game as normal. When it progresses to the point at which you want to save it, simply press the button then:

· Press 'D' to save to disk to reload at high speed.

· Press 'S' to save to disk to reload at normal speed.

- · Press T' to save to tape to reload at high speed.
- · Press 'C' to enter "Code Inspector."

THE PROCESS IS FULLY AUTOMATIC - JUST GIVE THE BACKUP A NAME

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 Now programs that load extra sections can be transferred from tape to disk.

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Extending Action Replay's capabilities even further, this disk, contains a collection of tape to disk routines for a few newer games which load subsequent parts in a non-standard way. All the latest titles are catered for — more than any competing utility, and unlike other systems, ACTION REPLAY LOADS EXTRA SECTIONS AT TURBO SPEED. Disk includes file copy, disk backup and other useful utilities. Regular updates at low cost for use with Action Replay only, Disk £7.95.

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Diskmate

is a fast disk turbo loader that will speed up your normal loading software by 5 times.

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PLUS A powerful machine code monitor/disassembler. All the usual monitor mmands: assemble, disassemble, move, find, compare, fill, number conversion etc., etc. NB. This is a full monitor, not a token effort like some available.

* Diskmate incorporates special switching techniques which make it "invisible" to the system. Therefore the fastload will work with more software than other types. In addition this makes the other commands including the monitor more powerful. For instance the monitor 'floats' and is able to look under ROMs and even under itself!

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Buy Action Replay II and Diskmate II together on the same cartridge for only . . . This must surely be the most powerful cartridge available for the Commodore

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Diskmate II was designed by Datel and the programming is by Dosoft. Need we say more?

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Now you can have a cartridge that you program as if it were computer RAM then acts as if it were ROM.

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For anyone who uses their printer often this chip is a must. It's quick and easy to use and the end results are impressive. YOUR COMMODORE Jan. 87.

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· FUTURE

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Fully Icon/Menu driven, comes complete with the Datel Lazerwriter -A lightpen featuring the latest polymer fibre optic cable and sensor for pin point accuracy of a calibre simply not possible with conventional system?...But that's not all - Blazing Paddles will also work with any standard input device including Joysticks, Touch Tablets, Paddles, Mice, Trackball and **Professional Graphic Tablets**

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Advanced Colour Mixing to create over 200 textured hues
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Hires Screens saved from Action Replay can be loaded and edited etc (Disk)

PLUS A zoom feature for single Pixel editing while viewing, the results at full scale.

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Note conventional Lightpens cannot cope with the high Pixel resolution of Blazing Paddles — only Lazerwriter is suitable as a Lightpen in

Complete

Adventure Aid Graphics

Allen Webb helps you smarten up the looks of your adventure programs.

Text adventures are all very well but it's nice to have illustrations to smarten up the appearance of your own programs and make them look more professional.

This is the second part of the program which we began last month (Your Commodore, August 1986) and it should enable you to churn out exciting and attractive adventures. It compliments the Adventure Aid program which originally appeared in our May 1986 issue.

Using the Editor

Listing 1 gives an editor for the design and saving of pictures. Before you use it, we must resort to some cunning. In order to give you maximum RAM, sprites 32 to 39 are used. Since these are located where the Basic program normally exists, we must raise the program in RAM. Here's how:

- 1) Reset the machine with SYS 64738.
- 2) Type in the line:

10 POKE 44,10: POKE 2560,0: RUN

then RUN it. Ignore any Syntax error messages.

- 3) Type in NEW and load the editor.
- 4) Input, in direct mode, POKE 44,8.
- 5) Save the program. If, after saving, you type in LIST, you should only see the line entered in step 2 above.

You can now use the editor safely. The editor has plenty of prompts to help you to use it. You may not fully appreciate PAINT mode. Any sprite comprises of dots over the background colour. Characters POKEd on to the screen will appear behind the sprite as

The following table gives a brief summary:

Main Menu invert picture H enter high resolution mode M enter multicolour mode fill picture toggle x expand toggle Y expand change background colour F1 change colour used in Paper mode F3 change colour 1 F5 change colour 3 enter PAPER moder Key 0 to 7 change sprite colours enter EDIT mode D enter DATA movement mode 0 Edit Mode invert picture Shift clear clear picture Home draw cursor Exit to main menu draw point erase point change pen move cursor to bottom right move cursor to left end of current line move cursor to right end of current line mark one end of line or apex of triangle mark bottom left corner of triangle L draw line B draw block triangle change line type Cursor keys as usual Paper Mode Keys 1 to 5 change pattern

toggle sprite on or off

change paper colour

toggle reverse field

exit to main menu

FI

F3

F5

a changed background. It is therefore possible to create extra colours and textures using this option. Any backgrounds you design are not saved with the sprite and you must make your own program create it. The paint option gives you a number of textures with F5 offering a reverse field.

I don't really have space here to fully describe the functions of the editor but I'm sure you'll get the idea after a bit of dabbling.

Date Move Mode

Allows you to move pictures to and from RAM and mix designs. Contents of RAM may be saved or loaded from data storage.

Line, Block, Triangle

I don't intend to describe the editor at length since you can sort it out by using it. I shall, however, describe how the Line, Block and Triangle commands work:

Line: Place the cursor at one end of the line and press *. Move the cursor to the other end and press L. The end of the line will stay constant until * is pressed again allowing you to draw rays emanating from a single point.

Block: Exactly for line but you

Triangle: Place the cursor at the apex and press *. Move the cursor to the bottom left corner and press =. Move the cursor horizontally to the bottom right corner and press T.

All three commands use the current line type.

The second editor allows you to set up a sequence of drawing instructions. The editor enters your commands into a temporary buffer with error detection to prevent out of range values. The temporary buffer only holds one command and is provided to allow you to test the effect of a command on the sequence. A second buffer is used to store the sequence. This can also be tested.

The command to test the temporary buffer will display the current picture and execute the command in the buffer. The sequence test command runs the full sequence. If you are happy with the command in the temporary buffer, you can then tack it on to the end of the sequence.

I've kept the editor simple with no commands to save or load sequences -I leave that to you. There is a simple command to display the sequence on the screen and it would be simple to convert it to use a printer.

This editor must also be relocated using the technique described earlier, in the first part of this series.

Try the editors and alter them as you see fit, I'm sure you'll agree that the results possible are quite decent.

PROGRAM: EDITOR

Please read 'LISTINGS' before entering program.

- 10 REM*********** AF
- 71 20 REM* SPRITE PICTURE EDITO R *
- 30 REM* 0C $A + M_{1986}$ *
- 40 REM************ E1 ***
- 30 50 DEF FNA(PX)=1064+PY*40+PX +1: POKE53280,14
- 3A 60 SA=30720:GOSUB 2070
- 70 OX=32: OY=58: PRINTCHR\$(1 4)
- EC 80 TY=1: XW=1: YW=1: PA=12:D X=0:DY=0:CC=1:LI=1:REM DEFAU LT SETTINGS
- 90 PRINTCHR\$(147): POKE53281 ,0: GOSUB 1660: POKE 650,128
- 100 SYS SA+42,2040,32: REM SET WINDOW LOCATION
- B9 110 SYS SA, OX, OY, SC(1), TY, XW , YW: REM CLEAR & DISPLAY SPR ITES
- 98 115 SYS SA+3,SC(0),SC(1),SC(2), SC(3), SC(4), SC(5), SC(6), SC(7)
- 53 120 SYS SA+6, C1, C2, C3
- 130 GETI\$: IFI\$=""THEN130

- 4C 140 IF I\$<"O"ORI\$>"8"THEN 17
- 26 150 SC(VAL(I\$))=SC(VAL(I\$))+ 1:POKE 55896+VAL(I\$)*2,SC(VA L(I\$))
- 160 SYS SA+3,SC(0),SC(1),SC(6A 2), SC(3), SC(4), SC(5), SC(6), SC(7):GOTO130
- 90 170 IFI\$="I"THEN SYS SA+21:G OTO130
- 180 IF I\$="M" THEN TY=1: POK BA E 53276,255: POKE 1808,77: P OKE 56080,7: GOTO130
- 190 IF I\$="H" THEN TY=0: POK 3B E 53276,0: POKE 1808,72:POKE 56080,7: GOTO 130
- A6 200 IF I\$="F" THEN 1400
- 210 IF I\$="X" AND XW=0 THEN 50 XW=1: GOSUB1630: GOTO160
- 98 220 IF I\$="X" AND XW=1 THEN XW=0: GOSUB1630: GOTO160
- 230 IF I\$="Y" AND YW=0 THEN A5 YW=1: GOSUB1630: GOTO160
- 240 IF I\$="Y" AND YW=1 THEN BF YW=0: GOSUB1630: GOTO160
- 250 IF I\$="[F1]"THENPA=PA+1: 5D
- POKE 55982, PA: GOTO130 260 IF I\$="[F3]"THENC1=(C1+1 DA)AND15:SYS SA+6,C1,C2,C3:POK E 55990, C1: GOTO130
- 270 IF I\$="[F5]"THENC2=(C2+1 1E)AND15:SYS SA+6,C1,C2,C3:POK E 55998, C2:GOTO130

D:	
11	
50	
40	320 IF I\$="[DOWN]" THEN OY=O Y+1:GOTO1630:GOTO130
27	330 IF I\$="[UP]" THEN OY=OY- 1:GOTO1630:GOTO130
ВО	340 IF I\$="[RIGHT]" THEN OX= OX+1:GOTO1630:GOTO130
6F	350 IF I\$="[LEFT]" THEN OX=0 X-1:GOTO1630:GOTO130
97	360 IFI\$="0008HµIIB"THEN C3=0 S SA+6,C1,C2,C3:GOTO130
48 A6	370 GOTO130 380 GOSUB1820:PRINTCHR\$(19)T
61	AB(26)"[WHITE, RVSON, SP]APER [SM]ODE[RVSOFF, WHITE, DOWN]" 390 PRINTTAB(26)"[WHITE, RVSO N]1[RVSOFF]: [YELLOW, RVSON]
47	SPACE[RVSOFF, WHITE]" 400 PRINTTAB(26)"[RVSON]2[RV
57	SOFF]: [YELLOW, C+, WHITE]" 410 PRINTTAB(26)"[RVSON]3[RV
8A	SOFF]: [YELLOW, CB, WHITE]" 420 PRINTTAB(26)"[RVSON]4[RV
E1	SOFF]: [YELLOW, SOOO8HµIIB, WH 430 PRINTTAB(26)"[RVSON]5[RV SOFF]: [YELLOW, C*, WHITE]"
6E	440 PRINTTAB(26)"[RVSON]6[RV SOFF]: [YELLOW, S+, WHITE]"
7E	450 PRINTTAB(26)"[RVSON,SF]1 [RVSOFF]: [YELLOW]TOGGLE[WHI
48	TE]" 460 PRINTTAB(26)"[RVSON, SF]3 [RVSOFF]: [YELLOW]PAPER[WHIT E]"
2A	470 PRINTTAB(26)"[RVSON, SF]5 [RVSOFF]: [YELLOW]REVERSE[WH
A2	ITE]" 480 PRINTTAB(26)"[RVSON, SE, R VSOFF]: [YELLOW]EXIT[WHITE]
38 67	490 PX=0:PY=0:CH=32 500 POKE FNA(PX), CH+ABS((RF= 1)*128): POKE FNA(PX)+54272,
BB CB	510 GET I\$:IFI\$=""THEN580 520 IF I\$="1" THEN CH=32: GO
22	T0510 530 IF I\$="2" THEN CH=102:GO
6E	T0510 540 IF I\$="3" THEN CH=127:GO

	D	T0510 3 550 IF I\$="4" THEN CH=105: C
	Will Shape	ОТО510
	AC	560 IF I\$="5" THEN CH=95: GO TO510
l	EL	
	36	
	81	590 IF I\$="[F5]" AND RF=0 TH
	00	EN RF=1:GOTO510 600 IF I\$="[F5]" AND RF=1 TH
		EN RF=0:CH=CH+(CH>128)*128:G OTO510
	08	
	CC	T0510 620 IF I\$="[F3]"THEN PA=PA+1
	01	:POKE55982,PA:GOTO510
	86	630 IF I\$="[RIGHT]"AND PX<23 THEN PX=PX+1:GOTO500
	46	640 IF I\$="[LEFT]"AND PX>0 THEN PX=PX-1:GOTO500
	25	650 IF I\$="[DOWN]"AND PY<10
	35	THEN PY=PY+1:GOTO500 660 IF I\$="[UP]"AND PY>0 TH
	07	EN PY=PY-1:GOTO500 670 IF I\$<>"E"THEN500
	09	680 GOSUB 1820:GOSUB1830
	61	690 POKE53280,14:GOTO130
	DB	700 GET I\$:IFI\$=""THEN SYS S A+12,DX,DY,2:SYS SA+12,DX,DY
	В5	,2:GOTO700 710 IF I\$="[HOME]" THEN DX=0
	6E	:DY=0: GOTO 700 720 IF I\$="[CLR]" THEN SYS S
	BF	A+9,0:DX=0:DY=0:GOTO 700
		730 IF I\$="@" THEN DX=94:DY= 42: GOTO 700
	18	740 IF I\$="[RIGHT]" AND DX<9 4 AND TY=1 THENDX=DX+2:GOTO7
	3C	750 IF I\$="[RIGHT]" AND DX<9
		6 AND TY=0 THENDX=DX+1:GOTO7
	5A	00 760 IF I\$="[LEFT]" AND DX>0
1	CE	AND TY=OTHENDX=DX-1:GOTO700 770 IF I\$="[LEFT]" AND DX>1
		AND TY=1THENDX=DX-2:GOTO700
	FD	780 IF I\$="[DOWN]" AND DY<42 THENDY=DY+1:GOTO700
1	B7	781 IF I\$=">"AND TY=OTHEN DX =95:GOTO700
	24	782 IF I\$=">"AND TY=1THEN DX
	00	=94:GOTO700 790 IF I\$="[UP]" AND DY>0 TH

0.1	ENDY=DY-1:GOTO700
91	791 IF I\$="<"THEN DX=0:GOTO7
C2	792 IF I\$="*"THEN LX=DX: LY= DY:GOTO700
70	793 IF I\$="L"ANDTY=0 THEN SY
	S SA+24, LX, LY, DX, DY, LI:GOTO7
42	794 IF I\$="L"ANDTY=1 THEN SY
	S SA+27,LX/2,LY,DX/2,DY,CC:G OTO700
D0	795 IF I\$="B"ANDTY=0 THEN SY
	S SA+51,LX,LY,DX,DY,LI:GOTO7
74	796 IF I\$="B"ANDTY=1 THEN SY
	S SA+54,LX/2,LY,DX/2,DY,CC:G OTO700
69	797 IF I\$="T"ANDTY=0 THEN SY S SA+57, LX, LY, XX, YY, DX, LI:GO
	T0700
D3	798 IF I\$="T"ANDTY=1 THEN SY S SA+60, LX/2, LY, XX/2, YY, DX/2
	,CC:GOTO700
21	799 IF I\$="="THEN XX=DX: YY= DY:GOTO700
C4	800 IF I\$="+"AND TY=OTHEN SY
29	S SA+12, DX, DY, 1:GOTO890 810 IF I\$="+"AND TY=1THEN SY
F7	S SA+18,DX/2,DY,CC:GOTO890 820 IF I\$="-"AND TY=OTHEN SY
1 3 mg/s	S SA+12, DX, DY, 0:GOTO890
03	830 IF I\$="-"AND TY=1THEN SY S SA+18,DX/2,DY,0:GOTO890
61	840 IF I\$="E"THEN POKE53280,
	14:GOSUB 1820:GOSUB1830:GOTO 130
5E	850 IF I\$="I"THEN SYSSA+21:G
22	851 IFI\$<>"/"THEN860
29	852 LI=LI+1: IFLI=3 THEN LI=
66	853 IF LI=6 THENLI=0
9D	854 CY=20:CX=19:GOSUB2020:PR INTLI:GOTO700
CD 44	860 IF I\$<>"P"THEN700 870 CC=CC+1:IFCC=4 THEN CC=0
44	
69	880 CY=12:CX=19:GOSUB2020:PR INTCC:GOTO700
7E	890 IF TY=O AND DX <96 THEN
OC.	DX=DX+1:GOTO700 900 IF TY=1 AND DX <96 THEN
	DX=DX+2:GOTO700
AF AC	920 CY=0:CX=21:GOSUB2020
96	930 PRINT"[RVSON, SR, RVSOFF]A M OR [RVSON, SS, RVSOFF]TORAGE
i i i i i i i i i i i i i i i i i i i	I ON [KVDOK, DD, KVDOK I JIOKAGE

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1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	940 INPUT MO\$
1B	
4A	960 NL=2:GOSUB2030:CY=0:CX=2 1:GOSUB2020
EA	970 PRINT"[RVSON, SS, RVSOFF]A
	VE, [RVSON, SL, RVSOFF]OAD OR
	[RVSON, SM, RVSOFF]IX"
AA 61	980 INPUT MO\$ 990 IF MO\$="S"THEN1020
5A	
EE	1010 IF MO\$="M"THEN1100
66	1020 NL=2:GOSUB2030:CY=0:CX=
D3	21:GOSUB2020 1030 PRINT"START ADDRESS"
34	
34	1050 SYS SA+30, AD:GOTO1200
C9	1060 NL=2:GOSUB2030:CY=0:CX=
-	21:GOSUB2020
6B DC	1070 PRINT"START ADDRESS" 1080 INPUT AD
4B	1090 SYS SA+33, AD: GOSUB2070
ED	1095 FOR I=0T07: POKE 55896+
(0	1*2,SC(I):NEXT
69	1096 POKE 55990, C1: POKE55998 ,C2:GOTO1200
41	1100 NL=2:GOSUB2030:CY=0:CX=
	21:GOSUB2020
63	1110 PRINT"START ADDRESS"
84 5F	1120 INPUT AD 1130 NL=2:GOSUB2030:CY=0:CX=
	21:GOSUB2020
EF	1140 PRINT"MIXING RULE [RVSO
	N,SA,RVSOFF]ND/[RVSON,SO,RVS
EE	OFF]R/[RVSON,SE,RVSOFF]OR" 1150 INPUT RU\$
51	1160 IF RU\$="A"THEN RU=0
64	1170 IF RU\$="O"THEN RU=1
73	1180 IF RU\$="E"THEN RU=2
28	1190 SYS SA+36, AD, RU 1200 NL=2:GOSUB2030
C9	
E9	1220 NL=2:GOSUB2030:CY=0:CX= =
22	21:GOSUB2020
DB	1230 PRINT"[RVSON, SS, RVSOFF] AVE OR [RVSON, SL, RVSOFF]OAD"
	AVE OR [RVSON, SE, RVSOIT]OAD
A2	1240 INPUT OP\$
E7	1250 NL=2:GOSUB2030:CY=0:CX=
FE	21:GOSUB2020 1260 PRINT"FILE NAME"
06	1270 INPUT FI\$
94	1280 NL=2:GOSUB2030:CY=0:CX=
	21:GOSUB2020
4A 3D	1290 PRINT"DEVICE" 1300 INPUT DE
31	1310 IF OP\$="L"THEN POKE 532
	A THE PARTY OF THE

69,0:LOAT FI\$,DE,1: POKE5326 9,255:GOTO130 4C 1320 NL=2:GOSUB2030:CY=0:CX= 21:GOSUB2020 78 1330 PRINT"START ADDRESS" F8 1340 INPUT SA 62 1350 NL=2:GOSUB2030:CY=0:CX= 21:GOSUB2020 77 1360 PRINT"END ADDRESS" 00 1370 INPUT EA 1380 POKE 53269,0:SYS 49191 07 FI\$, DE, 2, SA, EA: POKE53269, 255 : RUN 61 1390 GOTO1390 72 1400 CY=0:CX=21:GOSUB2020 1410 PRINT"[SB, SY, ST, SE] [SV 8D ,SA,SL,SU,SE] (O TO ERASE)" CF 1420 INPUT BY E5 1430 SYS SA+9, BY 1440 CY=0:CX=21:GOSUB2020 AA DA 1450 PRINT"[SPC27]" 1460 PRINT"[SPC27]" C4 78 1470 GOTO130 4D 1480 END 26 1490 PRINTCHR\$(19)TAB(26)"[R VSON, WHITE, SD | RAW [SM] ODE [WH ITE, DOWN]" 34 1500 PRINTTAB(26)"[RVSON, SI, RVSOFF]:[YELLOW,SI]NVERT[WHI TE " 1510 PRINTTAB(26)"[RVSON, SS, B1 SH]-[SH,SO,SM,SE,RVSOFF]:[YE LLOW]CLEAR[WHITE]" BD 1520 PRINTTAB(26)"[RVSON, SH, SO, SM, SE, RVSOFF]: [YELLOW] HOM E [WHITE]" 1530 PRINTTAB(26)"[RVSON, SE, CC RVSOFF]:[YELLOW, SE]XIT[WHITE 5E 1540 PRINTTAB(26)"[RVSON]+[R VSOFF]:[YELLOW]SET DOT[WHITE 87 1550 PRINTTAB(26)" RVSON]-[R VSOFF]:[YELLOW]CLEAR DOT[WHI TE]" 92 1560 PRINTTAB(26)"[RVSON, SP, RVSOFF]:[YELLOW]CHANGE INK[W HITE]" 1568 PRINTTAB(26)"[RVSON]@[R 68 VSOFF]:[YELLOW]DOT BLC[WHITE 75 1569 PRINTTAB(26)"[RVSON]<[R VSOFF]:[YELLOW]DOT LEFT[WHIT

1570 PRINTTAB(26)"[RVSON]>[R

VSOFF]: [YELLOW] DOT RIGHT [WHI

E "

TE]"

8F

A4 1571 PRINTTAB(26)"[RVSON]*[R VSOFF]:[YELLOW]MRK POINT 1[W HITE]" E7 1572 PRINTTAB(26)"[RVSON]=[R VSOFF]:[YELLOW]MRK POINT 2[W HITE " FD 1573 PRINTTAB(26)"[RVSON, SL, RVSOFF]: [YELLOW] DRAW LINE [WH ITE " 91 1574 PRINTTAB(26)"[RVSON,SB, RVSOFF]:[YELLOW]DRAW BLOCK[W HITE]" 1575 PRINTTAB(26)"[RVSON]/[R 8C VSOFF]:[YELLOW]LINE TYPE[WHI TE]" 3C 1576 PRINTTAB(26)"[RVSON, ST, RVSOFF]: [YELLOW, ST]RIANGLE[W HITE " 82 1600 PRINTTAB(26)"[WHITE]CUR SOR KEYS" BD 1610 PRINTTAB(26)"TO MOVE DO T[WHITE]" D4 1620 RETURN 1630 SYS SA, OX, OY, SC(1), TY, X 45 W, YW: GOTO160 21 1640 SYS SA+3, SC(0), SC(1), SC (2), SC(3), SC(4), SC(5), SC(6), SC(7) F6 1650 RETURN A4 1660 PRINTCHR\$(19)"[CYAN, CA, S*24, CS]" 2B 1670 FOR I=1T011 A7 1680 PRINT"[S-, SPC24, S-]":NE XT 1690 PRINT"[CZ, S*24, CW]" 8B 1700 FOR I=1TO7:PRINTTAB(25) "[S-]":NEXT 1710 CY=0:CX=13:GOSUB2020 4A 1720 PRINT" [WHITE, SS] PRITE [93 SC]OLOURS [[SP]EN 2 75 1730 PRINT"O 1 2 3 4 5 6 7" 1740 PRINT"[RVSON] [RIGHT] 40 RIGHT] [RIGHT] [RIGHT] [RIGH T] [RIGHT] [RIGHT] " EC 1750 FOR I=OTO7: POKE 55896+ I*2,SC(I):NEXT34 1760 PRINT"[DOWN, SP]APER:[RV SON] [RVSOFF] [SP]EN 1:[RVSO [RVSOFF] [SP]EN 3: [RVSON] RVSOFF]" F4 1770 POKE 55982, PA: POKE 5599 0,C1:POKE 55998,C2 1780 PRINT"[DOWN, SC]URRENT [04 SP EN: "CC 51 1781 PRINT"[UP, RIGHT15]LINE: "LI 1F 1782 POKE 53276,255: POKE 18

F3	08,77: POKE 56080,7 1790 PRINT"[CYAN,S*25,CE,S*1
28	1800 GOSUB 1830
97 B3	1810 RETURN 1820 PRINT"[HOME]";:FORI=OTO 19:PRINTTAB(26)"[SPC13]":NEX T:RETURN
9F	1830 PRINTCHR\$(19)TAB(26)"[W HITE, RVSON, SM]AIN [SM]ENU[WH ITE, DOWN]"
BB	1840 PRINTTAB(26)"[WHITE, RVS ON, SI, RVSOFF] : [YELLOW] INVER T[WHITE]"
17	1850 PRINTTAB(26)"[RVSON,SH, RVSOFF] :[YELLOW]HIGH RES[WH ITE]"
C7	1860 PRINTTAB(26)"[RVSON,SM, RVSOFF] :[YELLOW]MULTI COL[W HITE]"
72	1870 PRINTTAB(26)"[RVSON,SF, RVSOFF] :[YELLOW]FILL[WHITE]
1D	1880 PRINTTAB(26)"[RVSON,SX, RVSOFF]:[YELLOW]EXPAND X[WH ITE]"
07	1890 PRINTTAB(26)"[RVSON,SY, RVSOFF] : [YELLOW]EXPAND Y[WH ITE]"
GD.	1900 PRINTTAB(26)"[RVSON]0008 VSOFF]:[YELLOW]BACKGROUND[WHITE]"
1F	1910 PRINTTAB(26)"[YELLOW, SP
78	C3]COLOUR[WHITE]" 1920 PRINTTAB(26)"[RVSON,SF] 1[RVSOFF]:[YELLOW]PAPER[WHIT

1	8F	E]" 1920 BRINTTAR(26)"[BUSON SE]
	Of	1930 PRINTTAB(26)"[RVSON,SF] 3[RVSOFF]:[YELLOW]COLOUR 1[W
	A5	1940 PRINTTAB(26)"[RVSON,SF] 5[RVSOFF]:[YELLOW]COLOUR 3[W
		HITE]"
	C2	1950 PRINTTAB(26)"[RVSON,SP, RVSOFF] : [YELLOW]PAPER MODE[
3		WHITE]"
	7D	1960 PRINTTAB(26)"[RVSON,SE, RVSOFF] : [YELLOW]EDIT MODE[W
		RVSOFF] :[YELLOW]EDIT MODE[W HITE]"
	ВО	1970 PRINTTAB(26)"[RVSON,SD, RVSOFF] :[YELLOW]DATA MODE[W
		RVSOFF] :[YELLOW]DATA MODE[W HITE]"
	E9	1980 PRINTTAB(26)"[RVSON,SQ, RVSOFF] :[YELLOW]QUIT[WHITE]
		RVSOFF] :[YELLOW]QUIT[WHITE]
	F4	1990 PRINTTAB(26)"[DOWN, WHIT
	9D	E]CURSOR KEYS" 2000 PRINTTAB(26)"MOVE PICTU
	30	RE"
	6F	2010 RETURN
	64	2020 POKE 782, CY: POKE781, CX: POKE783, 0: SYS65520: RETURN
	DA	2030 CY=0:CX=21:GOSUB2020
	5F	2040 FOR I=OTONL
	53	2050 PRINT"[SPC38]":NEXT
	9A DA	2060 RETURN 2070 C1=PEEK(900): C2=PEEK(9
		01)
	THE PER	COOC MOD T COOCT COLT COUNTY

Ple	ase read 'LISTINGS'	
	ore entering program.	
AF	10 REM**********	
5B	20 REM* SEQUENCE EDITOR *	
A6	30 REM* A + M 1986 *	
05	40 REM**********	
81	50 TA=49152: FA=50000: SA=720: SYS SA+42,2040,32	=3(
85	60 PRINTCHR\$(147)"[RVSON,VTE]W[RVSOFF]ARM START OR [SON]C[RVSOFF]OLD START";:: UT I\$:	RV
84	70 IF I\$="W"THENCC=PEEK(99:GOTO90	99)
70	80 GOSUB 270: CC=0: POKE 7 255: POKE 999, CC	rA,

E0	90 POKE 53280,0: POKE53281,0 : POKE646,15
EE	100 PRINTCHR\$(147)TAB(6)"[YE LLOW]GRAPHICS SEQUENCE GENER ATOR"
2E B4	110 PRINTTAB(6)"[CT27]" 120 PRINT "[DOWN2]"TAB(10)"[WHITE]1. [CYAN]ERASE SEQUENCE"
4F	130 PRINT TAB(10)"[WHITE]2. [CYAN]ENTER COMMAND "
22	140 PRINT TAB(10)"[WHITE]3. [CYAN]TEST COMMAND "
3D	150 PRINT TAB(10)"[WHITE]4. [CYAN]ADD TO SEQUENCE"
78	160 PRINT TAB(10)"[WHITE]5. [CYAN]TEST SEQUENCE"

2080 FOR I=OTO7: SC(I)=PEEK(

902+I)AND15:NEXT

2090 RETURN

B5

BC

7E		1	CYAN]LINE (HIRES)
0.0	[CYAN]DISPLAY SEQUENCE"	13	470 PRINTTAB(10)"[WHITE]8.
C2	170 PRINT"[DOWN3,C5] [CA,S* 35,CS]	27	CYAN]LINE (MULTICOLOUR)
55		37	480 PRINTTAB(10)"[WHITE]9. CYAN]SQUARE (HIRES)
	\$, LEN(C\$)-1)	43	
5B	190 IF LEN(C\$)<3THENC\$="0"+C		[CYAN] SQUARE (MULTICOLOUR)
11	200 IFLEN(C\$)<3THEN190	27	500 PRINTTAB(10)"[WHITE]11.
36	210 PRINT"[YELLOW] [C5,S-]	FA	[CYAN]TRIANGLE (HIRES) 510 PRINTTAB(10)"[WHITE]12.
	[YELLOW] BYTES USED: [GREEN]"C	1 1 1	[CYAN]TRIANGLE (MULTICOLOUR)
25	\$"[SPC20,C5,S-]"		
2E	220 PRINT" [C5,S-] [YELLOW] SEQUENCE OCCUPIES: [GREEN]"FA	32	
	"TO"FA+CC" C5.S-1"	55	[CYAN]BRUSH (HIRES) 530 PRINTTAB(10)"[WHITE]14.
23	230 PRINT"[C5] [CZ,S*35,CX]	"	[CYAN] BRUSH (MULTICOLOUR)
20		FB	540 PRINT"[HOME, DOWN17]"TAB(
2D	240 GET I\$: IFI\$<"1"ORI\$>"6" THEN240	P.0	18);:INPUTI
D2	250 ON VAL(I\$) GOSUB 270,400	F8	550 IF I>9 THEN 580 560 ON I GOSUB 600,680,740,7
	,280,320,360,1700		90,820,900,990,1060,1140
FD	260 GOTO 100	B2	570 RETURN
02	270 FOR I=0T0255: POKE FA+I,	FF	580 ON I-9 GOSUB 1210,1290,1
	255:NEXT:CC=0:POKE999,0:RETU RN	DE	370,1460,1560 590 RETURN
E2	280 PRINTCHR\$(147):POKE 5326	DF	600 PRINTCHR\$(147):INPUT "[W
1.4	9,255:SYS SA+63,TA		HITE]X COORDINATE";P(1): P(0
41 A9	290 GET I\$:IFI\$=""THEN290 300 SYS SA+15	5C)=0
В9	310 RETURN	1 30	610 INPUT "Y COORDINATE"; P(2
52	320 IF CC+PN>255 THEN PRINT"	34	
	SORRY NO MORE ROOM IN THIS S	34	, , , , , , , , , , , , , , , , , , , ,
84	EQUENCE":GOTO 370 330 POKE 53280,11	6E	ULTICOLOUR"; P(4)
E5	340 FOR I=OTOPN: POKE FA+CC+	OF	640 INPUT "X EXPAND? 0=NO, 1 =YES"; P(5)
	I, PEEK (TA+I): NEXT: CC=CC+PN:P	24	650 INPUT "Y EXPAND? 0=NO, 1
(-	OKE999,CC		=YES";P(6)
6E 20	350 POKE 53280,0:RETURN 360 PRINTCHR\$(147):SYS SA+63	AE	660 FOR PN=OTO6: POKE TA+PN,
20	,FA	2E	P(PN):NEXT: POKE TA+PN,255 670 RETURN
10	370 GET I\$:IFI\$=""THEN370	47	680 PRINTCHR\$(147)
59	380 SYS SA+15	9B	690 FOR I=1TO8
09 62	390 RETURN 400 PRINTCHR\$(147)"[DOWN3]"T	5E	700 PRINT"INPUT COLOUR FOR S PRITE"I;: INPUT P(I): NEXT
	AB(10)"[WHITE]1. [CYAN]PICTU	DC	710 P(0)=1
	RE SETUP"	10	720 FOR PN=OTO8: POKE TA+PN,
8D	410 PRINTTAB(10)"[WHITE]2. [E0.	P(PN):NEXT: POKE TA+PN, 255
В8	CYAN]SPRITE COLOURS" 420 PRINTTAB(10)"[WHITE]3. [52 FC	730 RETURN 740 PRINTCHR\$(147): INPUT"CO
	CYAN]COLOUR REGISTERS"		LOUR REGISTER 1"; P(1): P(0)=
22	430 PRINTTAB(10)"[WHITE]4. [2
AD	CYAN]FILL PICTURE" 440 PRINTTAB(10)"[WHITE]5. [BE	750 INPUT"COLOUR REGISTER 2"
AD	CYAN]DRAW DOT (HIRES)	EA	;P(2) 760 INPUT"BACKGROUND COLOUR"
D8	450 PRINTTAB(10)"[WHITE]6. [The same of the sa	;P(3)
0.0	CYAN]DRAW DOT (MULTICOL)	E8	770 FOR PN=OTO3: POKE TA+PN,
80	460 PRINTTAB(10)"[WHITE]7. [P(PN):NEXT: POKE TA+PN,255

	81 5D	780 RETURN 790 PRINTCHR\$(147): INPUT"BY
		TE VALUE"; P(1): P(0)=3
	48	800 FOR PN=OTO1: POKE TA+PN, P(PN):NEXT: POKE TA+PN, 255
	A3 03	810 RETURN 820 PRINTCHR\$(147): INPUT"X
	73	COORDINATE"; P(1): P(0)=4 830 INPUT"Y COORDINATE"; P(2)
	11 D4	840 INPUT"FLAG"; P(3) 850 IF P(1)>95 THEN P(1)=95
	60	860 IF P(2)>41 THEN P(2)=41 870 IF P(3)>2 THEN P(3)=2
	4E	880 FOR PN=OTO3: POKE TA+PN, P(PN):NEXT: POKE TA+PN,255
	F3 B2	890 RETURN 900 PRINTCHR\$(147): INPUT"X
ŀ	43	COORDINATE"; P(1): P(0)=5 910 INPUT"Y COORDINATE"; P(2)
	98	920 INPUT"PEN"; P(3)
	E4 70	930 IF P(1)>95 THEN P(1)=95 940 IF P(2)>41 THEN P(2)=41
l	81 A5	950 IF P(3)>3 THEN P(3)=2 960 P(1)=P(1)AND 254
	60	970 FOR PN=OTO3: POKE TA+PN, P(PN):NEXT: POKE TA+PN, 255
	59 21	980 RETURN 990 PRINTCHR\$(147): INPUT"X1
		COORDINATE"; P(1): P(0)=6:IF P(1)>95THENP(1)=95
	B7	1000 INPUT"Y1 COORDINATE";P(2): IFP(2)>41THENP(2)=41
	F6	1010 INPUT"X2 COORDINATE";P(3): IF P(3)>95THENP(3)=95
l	26	1020 INPUT"Y2 COORDINATE";P(4): IF P(4)>41THENP(4)=41
l	91	1030 INPUT"FLAG"; P(5): IFP(5) > 5 THENP(5)=5
ı	13	1040 FOR PN=OTO5: POKE TA+PN, P(PN):NEXT: POKE TA+PN, 255
l	90	1050 RETURN 1060 PRINTCHR\$(147): INPUT"X
		1 COORDINATE"; P(1): P(0)=7:I FP(1)>95THENP(1)=95
	D4	1070 INPUT"Y1 COORDINATE";P(2): IFP(2)>41THENP(2)=41
	1D	1080 INPUT"X2 COORDINATE";P(3): IF P(3)>95THENP(3)=95
	97	1090 INPUT"Y2 COORDINATE";P(4): IF P(4)>41THENP(4)=41
	ВО	1100 INPUT"PEN"; P(5): IFP(5) >3 THENP(5)=3
	0A 43	1110 P(1)=P(1)AND254: P(3)=P (3)AND254 1120 FOR PN=OTO5: POKE TA+PN
	413	I I VII PIJK PIVELIJIJI PIJKE JATPN

1120 FOR PN=OTO5: POKE TA+PN

	,P(PN):NEXT: POKE TA+PN,255
E0 00	1130 RETURN 1140 PRINTCHR\$(147): INPUT"X
	1 COORDINATE"; P(1): P(0)=8:I FP(1)>95THENP(1)=95
04	1150 INPUT"Y1 COORDINATE";P(2): IFP(2)>41THENP(2)=41
OD	1160 INPUT"X2 COORDINATE";P(
C7	3): IF P(3)>95THENP(3)=95 1170 INPUT"Y2 COORDINATE";P(
E3	4): IF P(4)>41THENP(4)=41 1180 INPUT"FLAG"; P(5): IFP(5
81)>5 THENP(5)=5 1190 FOR PN=OTO5: POKE TA+PN
3A	,P(PN):NEXT: POKE TA+PN,255 1200 RETURN
71	1210 PRINTCHR\$(147): INPUT"X
	1 COORDINATE"; P(1): P(0)=9:I FP(1)>95THENP(1)=95
D2	1220 INPUT"Y1 COORDINATE";P(2): IFP(2)>41THENP(2)=41
1B	1230 INPUT"X2 COORDINATE";P(3): IF P(3)>95THENP(3)=95
35	1240 INPUT"Y2 COORDINATE";P(
E2	4): IF P(4)>41THENP(4)=41 1250 INPUT"PEN"; P(5): IFP(5)
во	>3 THENP(5)=3 1260 P(1)=P(1)AND254: P(3)=P
F1	(3)AND254 1270 FOR PN=OTO5: POKE TA+PN
	,P(PN):NEXT: POKE TA+PN,255
8B 44	1280 RETURN 1290 PRINTCHR\$(147): INPUT"X
	1 COORDINATE"; P(1): P(0)=10: IFP(1)>95THENP(1)=95
8D	1300 INPUT"Y1 COORDINATE";P(2): IFP(2)>41THENP(2)=41
OC	1310 INPUT"X2 COORDINATE";P(3): IF P(3)>95THENP(3)=95
F4	1320 INPUT"Y2 COORDINATE"; P(
6D	4): IF P(4)>41THENP(4)=41 1330 INPUT"X3 COORDINATE";P(
91	5): IF P(5)>95THENP(5)=95 1340 INPUT"FLAG"; P(6): IFP(6
E1)>5 THENP(6)=5 1350 FOR PN=OTO6: POKE TA+PN
DB	,P(PN):NEXT: POKE TA+PN,255
CF	1370 PRINTCHR\$(147): INPUT"X 1 COORDINATE"; P(1): P(0)=11:
70	IFP(1)>95THENP(1)=95
7D	1380 INPUT"Y1 COORDINATE";P(2): IFP(2)>41THENP(2)=41
3C	1390 INPUT"X2 COORDINATE";P(3): IF P(3)>95THENP(3)=95
A4	1400 INPUT"Y2 COORDINATE";P(4): IF P(4)>41THENP(4)=41

55

5D	1410 INPUT"X3 COORDINATE";P(
	5): IF P(5)>95THENP(5)=95
DO	1420 INPUT"PEN";P(6): IFP(6)
-	>3 THENP(6)=3
F3	1430 P(1)=P(1)AND254: P(3)=P (3)AND254: P(5)=P(5)AND254
03	1440 FOR PN=OTO6: POKE TA+PN
	,P(PN):NEXT: POKE TA+PN,255
21	1450 RETURN
A6	1460 PRINTCHR\$(147): INPUT"X
	C COORDINATE"; P(1): P(0)=12: IFP(1)>95THENP(1)=95
D9	1470 INPUT"YC COORDINATE"; P(
	2): IFP(2)>41THENP(2)=41
CO	1480 INPUT"DENSITY"; P(3): IF
	P(3)>255 THENP(3)=255
18	1490 INPUT"SIZE"; P(4): IFP(4
88)>2THENP(4)=2 1500 WI=(P(4)+1)*4
A4	1510 IF (P(1)+WI)>95 THEN P(
	1)=95-WI
90	1520 IF (P(2)+WI)>41 THEN P(
	2)=41-WI
98	1530 INPUT"FLAG"; P(5): IF P(
21	5)>5 THEN P(5)=5
21	1540 FOR PN=OTO5: POKE TA+PN, P(PN):NEXT: POKE TA+PN, 255
9A	1550 RETURN
44	1560 PRINTCHR\$(147): INPUT"X

	C COORDINATE"; P(1): P(0)=13: IFP(1)>47THENP(1)=47
EC	1570 INPUT"YC COORDINATE";P(2): IFP(2)>41THENP(2)=41
1F	1580 INPUT"DENSITY"; P(3): IF P(3)>255 THENP(3)=255
65	1590 INPUT"SIZE"; P(4): IFP(4
91)>2THENP(4)=2 1600 WI=(P(4)+1)*8: HI=(P(4)
F9	+1)*4:P(1)=P(1)AND254 1610 IF (P(1)+WI)>47 THEN P(
7B	1)=47-WI 1620 IF (P(2)+HI)>41 THEN P(
81	2)=41-HI 1630 INPUT"FLAG";P(5): IF P(
45	5)>5 THEN P(5)=5 1640 FOR PN=OTO5: POKE TA+PN
F6	,P(PN):NEXT: POKE TA+PN,255 1650 RETURN
19	1700 PRINTCHR\$(147);:0\$="" 1710 FOR I=OTOCC
33 EC	1720 Z=PEEK(FA+I) 1730 IF LEN(O\$)+LEN(STR\$(Z))
	+2 >=40 THEN PRINTO\$: O\$="" 1740 O\$=O\$+" -"+STR\$(Z)
42	1750 NEXT: PRINTO\$

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Programs on the disk will also be supplied as totally working versions, i.e. when possible we will not use Basic Loaders thus making use of the programs much easier. Unfortunately at the moment we cannot duplicate C16 and Plus/4 cassettes. However programs for these machines will be available on the disk.

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At the top of each article you will find a strap containing the article type, C64 Program etc. So that you can see which programs are available on which format you will also find a couple of symbols after this strap. The symbols have the following meaning:

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Please Note

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SEPTEMBER 1986-

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Cassettes or disk are available back to March 1986. Please ring the Editorial office (01-437-0626) for details of these.

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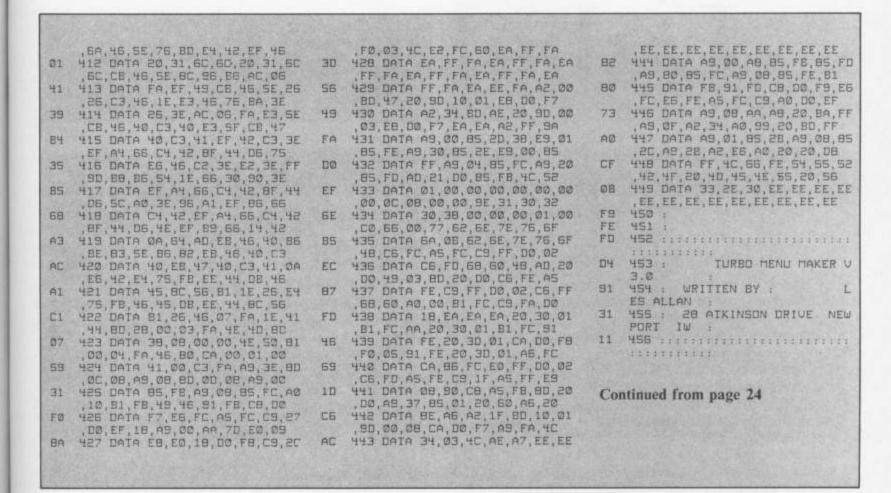
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Labeller 64

Let your C64 take the hassle out of printing name and address labels. Your C64, a printer, some address labels and this program are all that you need.

By A.J. Lenton

How often have you had to type the address of a friend on to an envelope? Or perhaps you have a list of people that you need to send letters to quite often. Labeller 64 will take the hassle out of this by keeping a record of the names and addresses that you use most often and printing a selection of them out at your command.

Loading Program

To load type LOAD "LABELLER 64", N where N=8 for disk and 1 for tape. The enter RUN; to start.

The first screen gives the option of altering the preset width and height of the labels and also the volume of the warning tone.

After these prompts have been answered the main menu will be displayed:

Load Data										. *	1)
Save Data											2)
Enter Data .	*		,								3)
Search Data	٠										4)
Alter Data									į,	្	5)
Delete Data.											6)
Print Data											7)
End Program	Ė,	Ĺ									8)
Enter choice											1

Load Data

To load an existing file from tape or disk press 'I' followed by 'RETURN'.
You will be asked:

ARE YOU USING TAPE OR DISK? T/D

Press 'T' or 'D' as required.

Tape

If you are using tape the message:

POSITION TAPE CORRECTLY, THEN RETURN MOTOR WILL STOP AUTOMATICALLY

will be displayed. Next you will be asked to:

ENTER NAME OF FILE TO BE SAVED/LOADED OR 'Q' TO RETURN TO MENU

Enter the file name and press 'RETURN'. The cassette will start and the file will be loaded.

Disk

If using disk you will be asked to enter the drive number and prompted with 0. Amend if necessary. Press 'RETURN'.

You will then be asked:

IS DISK INSERTED Y/N

If you press 'N' you will be returned to the main menu. If you press 'Y' you will be asked:

DO YOU REQUIRE DISK FACILITIES? Y/N

If you press 'Y' you will be passed to the Primary Disk Functions (see below for an explanation of this facility).

If you press 'N' you will be asked to enter the name of the file to be loaded. If the file does not exist an error message will be shown and you will then be returned to the main menu. Please note: Only enter the original file name. Do not add the suffix '.L' as it appears in the dis directory. This is just an aid to identifying 'Labeller 64' files from anything else on the same disk.

Chaining Files

It is possible to chain files together. As each one is loaded the total new file will be sorted into order based on the first line of each label. If the memory becomes full the message:

Memory Full
1) to Print Out
2) to Save Data
3) to Delete Data
Enter Choice

will appear. Select the required option.

Disk Facilities

If you chose to move to disk facility routine the following menu will appear:

PRIMARY DISK FUNCTIONS VALIDATE INITIALISE NEW READ DIRECTORY QUIT PRESS V,I,N,R OR O

If you wish to validate a Disk press "V" and the message:

VALIDATING PLEASE WAIT

will appear.

If you wish to Initialise the disk drive press "I" and the message:

INITIALISING DISK PLEASE WAIT

will appear.

If you wish to New a disk i.e. format a new one or reformat an existing one press "N". You will be asked:

ENTER DISK NAME

Enter the name that you wish to call the disk. If you pressed "N" by mistake just press return and you will return to the menu for this section. The next prompt is:

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ENTER DISK ID NUMBER IF REQUIRED

If you are formatting a new disk enter any two character ID. If you are reformatting an old disk you may just press "RETURN" and the disk will be renamed and the directory cleared. If you press "Q" you will be returned to Edit mode.

If you have chosen to read the Disk Directory it is printed on the screen. To temporarily stop the printout press the "SPACE" bar. To restart the display press the "SPACE" bar again. After the whole of the directory has been printed the following message appears:

RENAME SCRATCH OTHER QUIT CONTINUE ENTER: R,S,O,Q,C

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If you wish to rename an ".L" file press "R" and you will get the prompt:

ENTER ORIGINAL NAME

Enter the name of the file that you wish to rename. You will then be asked to:

ENTER NEW NAME

Again enter your choice and you will be told that the program is:

RENAMING "old name"

If you fail to enter either an old name or a new one the program will exit this function.

If you choose to scratch a file you are asked to:

ENTER FILE NAME

When you have done this the chosen file will be scratched from the Disk.

If you press "O" you will be returned to the "Primary Disk Functions" menu, if you press "Q" to quit this mode you will be returned to Edit mode and if you enter "C" to continue you pass to the part of the Disk program which asks for you to enter the file name.

Save Data

To save a file to tape or disk press "2" followed by "RETURN".

The prompts are then similar as for loading. When positioning the tape press "RECORD & PLAY" before

pressing "RETURN". When saving to disk you are given the option:

DO YOU WANT TO CREATE A NEW FILE OR OVER WRITE AN OLD ONE? (N/O)

If you press "N" and a file with the same name exists you will get an error message and you will be returned to the main menu.

Enter Text

To enter text press "3" followed by "RETURN". The screen will show the outline of the label, the number of the current lable being entered, the number of labels that the memory will accommodate (variable depending on the size of the labels), the number of lines on the label and the width of the label. To abort entry of text and return to the main menu press "F7". This may be done at any time during the entry of text.

Entry of text is as normal and editing and cursor keys work as normal with the following exceptions:

To insert text place the cursor at the position where the additional text is to be inserted. Press "INST" (SHIFT/DEL) and a reverse "I" will appear, in purple, at the bottom right corner of the screen. Any further text now entered will be inserted between the text to the left of the cursor and the text starting under the cursor. To turn this mode off press "INST" again.

To move the cursor swiftly to each end of the line being entered press "CTRL" and "-" together. If the cursor is not at the start of the line it will be moved there. If it is at the start it will be moved to the end.

At the end of each line press "RETURN" and the cursor will move down to the start of the next line.

The "UP" and "DOWN" cursor keys will only work if there are lines either above or below the one on which the cursor is present.

To complete entry of text either press "RETURN" continuously or press "F1" (the latter can be quicker if the label has been set for a large number of lines and you only wish to enter text on the first few).

In either case the message:

Is This Correct (Y/N)?

will appear. If you wish to modify the text press "N" and the cursor will reappear. If you press "Y" the message:

Another One (Y/N)?

will appear. If you press "Y" the screen will clear ready for the next label.

If you press "N" you will be returned to the main menu.

A tone will sound at five characters from the end of a line and also at the end of the line. Also if you try to enter too much text on to a line a warning will appear:

LINE TOO LONG Please Alter

To set auto repeat on all keys press "F3" and to cancel press "F5".

Search Text

To search for a label press "4" followed by "RETURN". The screen will clear and you will be asked to enter the search details. During this entry only the cursor left and cursor right keys can be used to move the cursor through the text. However, insert and delete work in a similar manner to the main entry of text.

When you have entered the details press "RETURN". The screen will clear and the message:

SEARCHING

will appear at the top of the screen. The program will then search through all the labels in the file and will list the number and first line of all labels which include the search details. Should the list reach the bottom of the screen the listing may be stopped by holding down any key. Obviously the more detail entered in the search pattern the fewer matches will be found.

When all valid entries have been found you will be asked to enter the number of the label to be viewed. Enter the number and press "RETURN". The requested label will be displayed and you will be asked if you want to see another one. If no valid entries are found the message:

ENTRY NOT FOUND
Do you wish to try again (Y/N)?

will be displayed.

Amend Label

To amend a label press "5" followed by "RETURN". Proceed as for SEARCH and when the required label

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is displayed it may be amended as per entry of data.

Delete a Label

To delete a label press "6" followed by "RETURN".

Proceed as for SEARCH until the lable is displayed. The message:

IS THIS THE ONE TO BE DELETED Y/N

will appear. If you answer "N" the "Enter Search Details" screen will reappear.

If you enter "Y" the label will be deleted from the file and you will have the opportunity to delete another one.

Printout Labels

To printout labels press "7" followed by "RETURN".

The screen will clear and you will be given the option of either choosing the labels to be printed (useful if you only wish to print a small number from the file), choosing the labels NOT to be printed (i.e. if you wish to print most but not all the labels), or printing the whole file:

Do you wish to select

- 1) ADDRESSES TO BE PRINTED
- 2) ADDRESSES TO BE OMITTED
- 3) TOTAL PRINTOUT Enter Selection Required

If you choose either "1" or "2" the screen will fill with the number and first line of all the labels in the file. Enter the appropriate numbers and press "RETURN" one at a time. If there are more than 20 labels in the file you can enter "C" to continue the listing. If you do not wish to see anymore press "P" to go to the printout routine. If you choose "3" you are passed straight to the printout routine.

In the printout routine you are first given the choice of printing to the screen or printer. If you select screen, a screen full of labels will be printed.

If you select printer you will first be given the opportunity to alter the device number of the printer (it is preset to 4). This is followed by the secondary address of the printer (preset to seven for lower case mode).

Next you are asked:

Do you want Manual or Auto paper feed Enter "M" or "A"

The next prompt is:

Number of lines to be printed II

where "II" is the total number of lines set for the label. If you wish to print less lines, alter the number and press "RETURN".

You are then asked if you are using single or double width lables. Press "S" or "D" as appropriate.

Finally you are requested to enter the width of the paper in inches and prompted with "g". Amend this if necessary (this only applies if you are using double width labels and the measurement is taken from the extreme edges of the paper including the tractor perforations).

If you wish to interrupt the printing at any time hold down the "SPACE" bar until the message:

Do You Wish To Reposition Paper or Stop Printing

appears on the screen. To stop printing press "S" and to reposition the paper press "R".

Exit Program

To exit the program or clear the

memory for further entries press "8" followed by "RETURN".

You will first be asked:

ARE YOU SURE (Y/N)?

If you press "N" you will be returned to the main menu with the existing file intact.

If you press "Y" you will be asked:

Do you want to run again (Y/N)?

If you press "Y" the memory will be cleared and you will be returned to the intitial screen.

If you press "N" the program will erase itself.

Getting It All In

The object code is listed in a format that must be entered using the *Hex Data Entry* program to be found elsewhere in this issue.

Late Ammendments

Since the copy for this article was set the author has made some alterations to the program. These are as follows:

- 1) The files are no longer sorted into order. This saves time during the operation of the program and also some memory.
- 2) It is now possible to exit a LOAD routine by holding down the SPACE bar.
- 3) If using disk it is also possible to abort a SAVE in the same manner and any file created will be scratched.
- 4) When the program is in search mode it is now possible to stop the search by pressing 's'.
- 5) When printing out labels the program now asks for the number of characters to be left between adjacent labels and it is now possible to set the number of lines between labels.

PROGRAM: LABELLER 64 Please use HEX DATA ENTRY to type in this program. 0801 0B 08 00 00 9E 32 30 36 0809 31 00 00 00 20 44 E5 A9 :FC 0879 1F E4 1E 08 14 98 10 BA 08E9 18 3F 13 A1 18 6E 18 0D 08F1 19 1A 19 46 0C 9A 17 27 0811 0C 8D 20 D0 8D 21 D0 EA :50 0881 18 BE 18 C2 18 D0 18 00 0819 A9 36 85 01 4C 82 63 E9 :65 0821 40 F7 40 9E 64 A4 19 D4 :A1 Ø889 19 ØØ 19 2C 08FS 19 57 0C CE 16 40 0C 89 0901 20 76 20 64 20 6A 20 64 14 ØA 17 F3 : A5 0891 16 25 17 BS 17 6D 1F E9 :2B 0829 1A 98 1A 50 18 FE 18 2A 0831 1C C5 1C 79 1A 11 18 F5 :58 0899 16 58 17 47 17 7F 17 64 0909 20 70 20 FB 20 CA 20 95 :5B 08A1 17 60 17 76 17 88 17 91 0911 13 CØ 13 DE 13 ØE 21 EØ : EE 0839 18 14 03 F1 12 1D 12 A5 0841 11 7D 0C 8D 11 EA 11 D0 : F6 08A9 17 11 18 CF 1C 93 1E DD :10 0919 20 70 23 OF 24 AF : 28 0881 1C 58 1F CØ 1E 64 23 8E 0921 24 6A 24 6A 24 E6 39 D0 :53 0849 1D 39 1E 0B 12 02 12 26 0929 02 E6 3A A0 00 B1 39 0A 0889 22 67 22 5A 0D 98 0C 97 BS: 0851 12 2F 12 20 14 4A 10 4E : D1 ØBC1 ØD CØ 17 BC ØB 6D ØC ED 14 0A BØ 07 0A AB BØ Ø931 BØ -50 08C9 12 FC 12 6A 23 CA 12 E7 08D1 0E 6D 14 CC 15 15 13 3C 0859 1D 52 1D 56 1D 41 1D 38 : 50 0939 18 4C 99 09 0A AB B0 03 : E4 0861 1D FC 13 84 1F 84 1F DF 0869 21 E2 1F E2 1F E5 23 1D 0941 4C C5 0A 4C D7 09 AA BD 0949 26 08 85 3F 8D 27 08 85 0809 16 A1 16 3A 18 55 18 4E

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ØEC1 ØF ØECS BS DE ØE ØED1 A9 Ø1 50 AB B9 DE ØE 96 ØED9 52 Ø5 63 60 7E 3F ØF 33 00 BA 78 28 03 01 10 : FA ØEE1 ØEE9 Ø3 4C 30 AD 68 85 46 :17 ØEF1 85 45 70 :12 ØEF9 DØ ØB 88 B1 45 99 ØFØ1 88 10 F8 30 ØB AØ Ø2 81 : DD ØFØ9 45 64 C8 B1 45 BS 65 :81 ØF11 90 0D 80 SF A0 02 B1 45 :FB ØF19 85 64 CB B1 45 85 65 68 ØF21 85 6D 68 85 6C 85 ØD 98 :20 ØF29 30 4C AS 65 65 6D 85 65 +C5 ØF31 A5 64 65 6C 85 64 70 64 : 90 0F39 A5 88 AS : 38 ØF41 45 68 85 60 68 85 :DA ØF49 ØD 30 2E AS 6C 10 06 AS :A1 ØF51 64 30 06 10 41 A5 64 30 · C5 ØF59 ØF C5 6C 30 08 F0 03 4C - 41 ØF61 99 ØF AS 6D C5 65 90 2E :51 ØF69 68 85 3A 68 85 39 9A 5B : 00 ØF71 40 09 4C CB 0F 4C 28 26 : F8 ØF79 10 AS 6C 10 06 AS 64 ØF81 Ø5 10 E5 A5 64 30 OF C5 : BE ØF89 6C FØ Ø5 10 DB 4C 99 ØF :09 ØF91 A5 65 C5 6D 8Ø D2 58 68 : Ø6 ØF99 68 4C 26 09 A0 :71 06 B1 45 OFA1 C9 05 F0 21 20 DB 10 A0 :F9 0FA9 02 B1 45 AA CB ØFB1 8A 20 91 83 A5 66 45 6E E9 0FB9 85 6F A5 61 20 6A 88 20 0FC1 89 10 4C 99 0F 4C 48 82 : B2 : 40 ØFC9 86 48 BA 86 57 A6 48 9A :83 ØFD1 98 30 0E AS 64 A4 65 20 :15 83 A9 00 A0 06 ØFD9 91 :50 ØFE1 FF ØF AS 6E 85 ØD 38 40 :01 ØFE9 45 66 85 6F A5 51 20 6A ØFF1 88 AØ Ø6 89 60 ØØ 88 91 :FE OFF9 45 DØ F8 18 AØ Ø6 AG 57 : AB 1001 BD 01 01 99 58 00 E8 88 : C6 1009 DØ F6 86 57 BØ D6 20 81 : ØE 1011 12 A4 00 10 03 20 93 :35 1019 9A C9 02 FØ Ø5 A5 48 40 1021 68 0F 4C 99 0F AØ Ø5 B1 1029 45 C9 05 F0 98 A5 6C 85 1031 30 A4 6D 84 2F 20 DF 10 :00 :43 1039 AS BE BS 0D 45 66 85 6F : 54 1041 AS 51 20 6A 88 20 89 10 :46 1049 68 A8 68 20 DF 20 B1 1051 12 A4 0D 10 03 20 93 1059 C9 02 D0 03 4C 99 ØF BA : EC 1061 BD 01 01 85 3A BD 02 01 : DC 1069 85 39 20 FC 88 20 40 0D - 3F 1071 A5 30 A4 2F 20 91 B3 20 : ØB 1079 40 0D A5 45 48 AS. 45 48 : 45 1081 AS 05 48 40 26 Ø9 AØ Ø6 : BF 1089 A9 00 91 45 89 60 00 88 1091 91 45 DØ FB 60 BA 78 68 BF 1099 10 03 4C 30 AD 85 2F A0 10A1 01 68 D1 39 D0 18 85 46 :18 :40 10A9 68 C8 D1 39 00 : 44 13 85 45 10B1 A5 39 69 01 :F5 85 1089 E6 ØE 3A 24 2F 66 SE 10C1 0E BA A4 2F C0 05 F0 09 :40 10C9 BA 18 69 09 AA 9A 4C 98 A3 1001 10 69 10 AA 9A 4C 98 10 1009 AS 6C A4 60 C6 11 85 6A :FC :20 10E1 84 68 49 FF 2A BØ 16 AS : CS 10E9 6A 49 FF 85 6A A5 6B 49 :14 10F1 FF 85 58 ES 68 DØ Ø2 10F9 6A A2 FF D0 02 A2 00 A9 :01 1101 00 86 6E 85 6C 85 6D AZ AF 1109 90 85 69 A0 00 18 A5 6A :09 DØ 18 A6 68 86 6A A6 6C : 88 1111 1119 86 68 69 08 C8 50 DØ EE :90 1121 A9 00 85 69 85 6E 60 69 1129 01 06 6B 26 6A 10 38 1131 E5 69 BØ EC 49 FF 59 Ø1 F5 1139 85 69 90 08 E6 69 FØ Ø5 : ØB 7E B9 C9 90 1141 56 5A 56 5B 50 4C AE: 1149 E5 11 A5 : Ø4 : 77 69 FØ 13 14 A2 FF 1151 90 E8 85 69 DD 1159 AS B1 90 0A F0 F6 4C FF 48 1161 B2 85 6C 85 6D 60 A5 1169 A0 24 5E 10 02 C6 1171 59 C9 F9 10 1E 20 11 ØF 89

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C5 26 09 DB 16 20 20 64 E3 66 1201 48 12 29 04 FØ 36 DØ : F3 58 1489 AB 20 64 1771 92 15 :12 AA 40 09 28 16 50 68 A6 1209 50 48 12 29 EØ FØ 20 FC 1401 00 01 AB 84 ØB 4C 47 15 : 32 1779 ES. 40 25 09 DB 50 16 20 E4 1211 25 50 48 15 29 01 FØ 24 : 15 1409 89 99 E8 Ø7 CB BD 00 02 1781 EA 4C 25 09 20 DB 15 52 DØ 1219 19 20 48 12 29 88 78 39 E8 C9 FØ F2 C9 BØ E6 C9 14D1 SC FØ 36 C9 57 1789 20 B4 EZ 40 56 DB 92 20 20 20 48 12 07 20 48 DØ 1221 18 10 29 05 A6 1409 3A BØ ØB. CS 30 BE 1791 15 50 ØE E3 PA 83 DØ 12 12 50 29 BE 14E1 1799 09 48 SE FØ Ø4 C9 45 : DE A9 25 48 A5 10 : F6 1231 FF 09 A9 85 64 85 Da 14E9 DØ CB A4 38 84 22 20 17A1 14 FØ 92 :FØ 09 A5 64 QE 3E 31 85 1239 65 40 25 20 PA. 00 85 64 DB 14F1 15 AA DØ 04 85 0B FØ Ø2 17A9 66 60 54 00 65 50 F7 B7 6C EØ 1241 85 65 40 28 09 10 90 11 B1 14F9 84 ØB SA 92 86 23 CB 1781 10 : DA 14 00 18 EP FØ 03 20 SB 1249 11 FØ 25 A5 64 30 06 A5 AP 1501 98 18 E5 38 20 B7 10 A2 1789 03 A5 10 FØ 14 BC DØ 60 30 1251 EC 14 10 04 AS EC 10 FE 47 15 15 1509 82 00 BE 0B 50 64 3F 17C1 03 E0 AA A5 64 02 FB 1259 14 C5 : 7E 64 ØA DØ ØE 30 A5 1511 38 ØB 05 80 D3 88 CH 1709 DØ 18 A4 84 65 2F 68 FØ 54 CS 60 90 08 FØ 1251 03 A9 1519 89 E8 07 8B 7C 1701 1709 17 65 24 E9 30 FØ 68 85 14 68 85 BC 15 02 60 A9 01 1269 50 12 OC 1521 85 18 BD 22 65 10 F0 03 18 AS 03 20 AA 91 1271 A5 10 05 11 FØ ED 20 18 ØE 1529 85 65 BD 50 55 65 17E1 A5 64 B1 48 B2 40 25 1279 IA E6 10 20 18 BC A5 1531 1539 64 70 CA CO B7 C6 ØC DØ EB CA BA 17E9 50 20 AA B1 64 A5 85 15 26 1281 30 07 A5 BE 10 13 A9 02 116 00 DØ DA AS 5C FØ EB 17F1 AS. 65 85 14 60 20 28 ØD SE 50 A5 BE 1289 10 EØ 20 90 12 BØ 15 AØ Ø1 B1 Ø7 C9 42 FØ 1541 03 20 BE 39 17F9 E6 A5 66 10 06 20 EC DA 04 48 FF 29 C5 69 90 CE 1291 C9 04 F0 60 DF 1549 C9 41 FØ C9 42 ØB DØ 1801 18 20 F7 **B7** EF 60 A5 61 1299 DØ 0B 1551 4C 26 09 20 81 40 : 0A : C4 : F7 15 ØF 91 91 14 4C 26 08 A5 64 85 1809 PF 26 09 A5 10 BC 12A1 C6 A5 62 CS A8 F0 6A DE 1559 21 20 81 15 AØ 00 4C EØ 1811 FØ 15 AS 65 57 12A9 90 C3 DØ BB A5 63 CS **6B** : 60 1561 20 5A 86 64 86 65 40 2F 00 EB 1819 85 14 2F 18 A5 66 10 05 1281 90 BB DØ ВЗ A5 64 C5 46 1569 86 10 60 A9 FF 45 64 : 4F 1821 ØB 20 EC 20 18 20 BB 1588 90 B3 DØ AB A5 65 C5 SD : 20 1571 AS. 64 FF 45 65 85 65 :41 1829 **B**7 E6 10 A0 00 B1 14 16 1201 90 AB DØ BA EA 04 50 AS CF 1579 DØ 65 02 E6 64 60 E6 39 :61 1831 85 65 84 64 40 28 99 20 3A 1209 A9 01 A6 61 A6 65 D0 07 : 44 : A7 10 DØ Ø8 A9 Ø1 DØ 1581 3A 60 AS DØ 92 E6 91 : EB 1839 64 15 20 E4 FF AA 90 1201 ØD FØ ØB AB 1589 DØ 03 4C B3 18 50 89 90 08 09 3A 47 AØ :57 E9 30 1841 BØ 07 96 AB B1 1209 03 39 18 65 20 1591 00 92 C8 C9 20 FØ 11 : 48 1849 ØF C9 29 85 65 4C 20 E4 FF 15 FF 40 CB 13E1 39 85 39 90 02 AE 72 1599 00 FØ ØD C9 55 DØ :05 1851 88 AF 7A 34 84 FF 85 3C 4C 13 DØ Ø3 4C 29 40 DØ Ø8 12E9 26 09 AØ 01 B1 39 RA CB B5 15A1 49 30 92 15 :19 1859 10 CB AA FØ Ø8 8D 00 01 12F1 B1 39 85 3A 86 39 4C SC FZ 15A9 50 A5 30 14 : E6 1851 84 24 CB 84 25 50 90 E5 10 12F9 80 BA 10 EØ 90 11 AS. 39 DE 15B1 90 40 DO 08 AD .37 AS : B5 1869 40 SB 15 20 DD 17 65 52 1301 69 01 48 AB 3A 01 90 : A4 EB 1589 DØ 06 20 14 88 15 4C EØ : 38 1871 85 2F 20 31 19 20 1309 8A 48 A9 48 DØ DB A4 40 :78 1501 15 AØ 00 84 64 84 55 FØ 1879 A5 65 85 1881 10 F0 08 30 50 31 19 AS 03 1311 68 C9 A4 DØ 7C 35 A4 09 68 1509 5F AØ 00 EE 37 14 30 1881 10 84 A5 65 85 14 A5 FØ 1319 85 34 68 85 39 40 26 94 15D1 84 45 88 84 10 BB 1889 64 85 85 :02 15 4C 00 B1 94 20 18 F7 BA C9 1321 04 FØ ØB C9 44 FØ :81 1509 25 A4 ØB DØ 15 A5 13 FØ Ø6 A5 50 F9 AB : F6 1891 B7 AØ 45 2F 25 RE 1329 07 C9 05 FØ 0A 4C EØ AB :EA 15E1 FØ Ø6 A5 90 29 03 :63 1899 30 FØ FB 40 95 09 AS 00 : 53 07 AA F7 FØ :78 :78 1331 BA 69 9A 00 D7 DB 15E9 DØ AD 00 02 F0 BA AO :20 18A1 85 2F 78 18 CB FF 20 21 1339 69 OF DØ 50 00 17 AØ FF CB B9 15F1 50 00 20 C9 FØ : CA 18A9 A5 2F 85 39 A5 30 85 EA 65 1341 A5 01 : ØC 3F ØA 85 2F 15F9 FB C9 25 DØ Ø5 CB 30 1881 CE 38 4C AØ FF EØ 5C 20 50 A5 48 AB AB 38 1349 C5 2F 90 36 34 1B FØ 1501 45 C8 84 24 20 92 1889 Ø1 AA EØ 84 BA 84 B9 AØ 91 1351 AA CB B1 39 C9 D1 DØ : DC 1609 FØ 05 A5 30 DØ F6 98 : 05 1801 00 84 B7 FØ 1F EØ 82 1359 A5 2F 18 55 39 85 90 :81 1611 1619 ØB. 18 E5 FØ Ø8 ES 24 A8 F0 08 88 81 24 C8 98 20 90 98 ØD :03 1809 SE FØ 11 DØ 53 AS 85 64 EA 1361 Ø2 E6 3A AØ Ø2 B1 39 FØ : 9B 45 A5 C9 49 1801 87 A5 65 85 BB A5 55 BB 4C 1369 EQ ED 12 A9 FF 85 3A : CC 22 FØ 01 1521 10 1809 BC DS 20 31 19 50 DD 17 A5 65 1371 AB 8A 18 65 E3 40 39 48 : 47 1629 AØ Ø1 B1 39 C9 41 DØ 18E1 65 85 18E9 17 AS 18F1 20 DD ØB : 14 B9 20 31 19 20 DD MD Ø1 C8 98 1379 A4 BE 90 21 48 AS FC 1631 89 81 15 4C 65 4C - C4 AS 65 85 DD 17 AS 31 19 88 20 26 BA 20 ØD 1381 48 00 B1 39 D4 18 65 : ØF 1639 09 A0 00 B1 41 FF FØ : B9 65 85 CS 1389 39 85 39 90 02 E6 AE 4C 118 1641 58 85 2F 29 3F 24 AF CØ 09 2F ØE 18F9 4C 26 50 DD 17 EB 1391 03 10 FØ 11 A5 64 : AD 1649 14 1651 BF 70 22 85 22 85 30 84 10 : SE 1901 AS 65 88 C3 85 20 FF 69 1399 48 A5 65 48 98 10 04 A5 :15 A5 20 B1 30 85 15 20 18 1909 26 09 50 DD A6 65 86 SE 13A1 BB 48 98 48 40 26 09 : 45 1659 B7 BS 15 40 47 16 F7 1911 13 50 C9 FF 40 26 09 59 20 13A9 10 03 70 50 53 BC A2 00 :46 1661 BI 41 85 65 41 B3 85 1919 00 17 A6 65 86 13 50 CS. 51 EB EØ 1381 48 05 DØ FA :93 1669 64 A2 01 DØ ØC 84 64 4C 28 85 13 20 :63 1921 FF 09 40 20 CC FF PA FB 1389 40 09 26 68 1C 38 1671 BS 1679 CB 85 10 16 B1 41 85 65 50 90 1929 00 85 26 09 68 85 BF 1301 FØ ØE 10 03 68 84 10 AS 15 48 EA 46 04 1931 3F 68 85 40 E6 3F 86 DØ Ø2 85 65 68 85 64 40 26 09 1581 48 BA 38 65 41 85 41 90 A6 41 A4 42 CS 1939 40 85 10 68 DØ 03 40 BF 1301 SA 06 68 95 60 CA DØ FA 26 1689 02 42 E6 50 EC 1941 34 ØD 68 85 65 68 64 ØS 1309 26 09 68 85 11 FØ ØE PZ. 1691 EB 55 DØ 01 CB 84 23 93 1949 60 3F 00 A9 01 BS BA AS 57 10 Ø3 68 85 6E 68 85 6D :E3 1699 60 5A 20 6C Ø3 00 AB 41 OE 1951 00 85 89 FØ 19 A9 01 DØ ЭF 13E8 85 GC 40 56 SA 80 ØB : 50 15A1 A4 42 E8 65 DØ 85 01 CB 88 1959 02 A9 00 B5 B9 20 DD 17 EØ 13F1 CA DO FA 4C 12 25 16A9 B4 66 AØ FF 84 10 CB B1 CB 1961 A5 65 85 BA 68 68 91 13F9 09 SA 00 86 64 78 86 65 EB 1969 68 85 6S 1971 85 87 AS 1681 41 09 FF FØ E4 85 SE 68 85 64 A5 64 30 1401 10 40 29 A2 85 48 24 5C 70 98 20 85 AB 85 1689 3F 64 ØЗ 6A 66 85 BC AS 85 96 1409 ED 86 6C EB 86 11 4C 26 : AD 1601 05 CB CB 10 16 57 1979 85 BB A9 00 85 90 85 00 SA 1411 09 A2 00 85 64 EB 86 AB 1609 40 47 15 AD 10 Ø8 85 41 :FC 1981 68 22 SA FB 90 AS. AB 68 09 A2 86 11 1419 86 10 4C 25 00 86 63 10 08 16D1 85 42 4C 25 09 :47 58 48 1989 48 A9 A5 31 A4 35 BS 1421 E8 86 6D 86 4C 26 EA 1609 09 A5 64 A4 65 : C6 1991 85 20 85 2F 84 SE 84 7E 00 86 08 CA BE 18 20 91 83 C6 10 60 20 E3 ØA A5 2B A4 50

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1059 1981 FF AØ Ø1 B1 39 20 81 82 EØ ØE BØ 52 Ø6 66 19 85 : 61 85 PARI BD BA 3F 1061 6C CA DØ FS AS BC 38 1F19 90 EB : BD 40 19 :32 1069 29 95 AS 6D 85 65 40 26 09 86 09 1F21 20 DD 19 :48 1071 64 E8 86 65 40 26 09 86 99 1F29 4C 56 09 50 DD 38 AS : E6 25 BB 1079 25 BB 69 A5 60 85 65 A5 EC 79 85 1F31 BC FØ AZ ES 65 90 9E AB -F1 BB 25 AA 25 BB 70 40 18 94 C5 69 1F39 CB 18 A6 65 FØ 29 CA BA - 32 1901 25 EE 25 26 26 30 26 4C BE 1089 FØ ØB 25 85 60 AS 1F41 AS 65 60 85 24 A6 6E 90 01 : 68 1909 26 EØ 19 EE 19 A2 02 BD :00 1091 85 60 4C 84 1C 40 29 89 26 1F49 E8 86 25 20 90 1D A9 FF : 40 1A 9D 26 09 CA 10 F7 19E1 : A5 1C99 A5 11 05 10 FØ 03 20 18 :10 1F51 26 :82 40 26 09 50 F4 4C 19 26 : B9 1EA1 19 95 55 45 6E 85 6F AS. · BF 1F59 ØE 00 B1 :64 BD 15 1A 9D 26 : B7 1CA9 61 20 78 BF 4C 26 09 A5 · 7D 1F61 54 C8 84 10 4C 26 09 40 60 AS 91 :47 19F9 09 CA 10 . 9E 1081 25 A4 24 20 DF 10 A5 40 1F69 48 B2 20 61 26 38 A5 7F FØ Ø9 E6 39 DØ Ø2 1CB9 A4 3F 1901 40 50 91 B3 C6 10 4C 1F71 1F79 E5 31 85 65 AS 34 ES 32 : 1E 25 24 AE 600T 09 4C B3 18 4C : 38 1CC1 A4 1C 20 2A 1A A5 10 FØ : F4 85 64 A9 01 BS 10 40 26 :01 1A11 00 1A E6 39 D0 A5 11 D0 1009 CF 40 BF 30 10 AS 64 85 65 BB 1F81 Ø9 86 2F A5 10 DØ Ø5 2Ø :09 1419 ØA A5 64 A4 65 20 91 1CD1 AØ ØØ BY 64 CB BY 1Ø YC : 70 83 - 50 1F89 AA B1 E6 10 AS 20 : 15 CB 10 60 DB 10 60 1CD9 26 09 AS 65 85 22 A5 : AB 55 38 1F91 ØA 26 1A29 10 FØ 15 A5 FØ 2E : 44 1CE1 85 23 AS. 64 FØ 14 20 BS. : DA 1F99 AB BA 65 64 AA 98 65 49 :00 1A31 6C AY 64 84 6C 85 64 AS : 3E 1CE9 B7 A9 00 B5 10 20 BS ØE :63 :18 1FA1 AB BA 65 4A A6 2F EØ 3E 1A39 6D A4 65 84 6D 85 65 60 1CF1 DØ Ø5 20 AA B1 E6 10 :7B : 2E 40 1FAS FØ Ø7 84 3D 85 3E 40 25 1A41 A5 11 DØ 13 20 18 BC A2 1A49 Ø7 B5 60 B4 68 94 60 95 :39 1CF9 26 09 20 64 15 4C 26 09 1D01 A9 01 A4 64 F0 28 C4 6C 26 09 EA: 09 84 2F AØ 00 85 30 B1 : C4 1FB1 1001 A9 01 :83 :33 1FB9 2F DØ 03 CB DØ 40 85 61 1009 90 03 00 04 0A 0A 00 06 1011 A4 5C F0 17 84 64 AA A0 1451 68 CA DØ F5 86 70 60 20 : 5E :60 1FC1 CB B1 2F : 67 85 66 47 1A59 DB 10 4C 1A A5 64 A4 : BF : 4A 1FC9 E2 CB B1 PF 85 63 CB B1 1851 65 20 91 83 C6 10 40 47 : ØE 1019 00 B1 65 D1 6D 90 09 D0 :20 1FD1 2F 85 64 C8 81 2F 85 65 AF 20 DB 10 AS 30 A4 2F 1021 C4 64 DØ F3 BA 1969 1A : EØ ØA CB 60 :1E 1FD9 A9 00 85 10 4C 26 09 86 :1F 10 D0 03 20 AA B1 1A71 C6 10 60 EA 10 EA 20 91 B3 AS. :76 1029 02 :01 1FE1 ZF AS : 06 1A79 FØ 15 A5 65 49 FF 85 65 :47 1031 DØ F6 A9 Ø4 60 20 Ø3 1D : 94 1FE9 A5 65 OA AB A5 64 2A AA :10 1881 AS 64 49 FF 85 64 E6 65 1FF1 1FF9 27 1039 29 04 D0 22 F0 2D 20 03 :17 98 65 49 AB BA 65 4A A6 1A89 DØ Ø2 E6 64 4C 26 Ø9 AS :65 1D 29 03 D0 19 F0 24 A9 1041 -59 2F EØ 44 FØ 1891 55 49 FF 85 66 40 56 09 : B1 1049 02 D0 0A A9 01 D0 05 A9 -03 2001 3D 4C 26 09 84 2F AØ ØØ 79 1A99 10 25 11 FØ 15 18 :14 1051 06 D0 02 A9 05 85 BB 20 : F4 2009 85 30 A9 01 85 10 B1 2F 2011 85 64 C8 B1 2F 85 65 4C : 34 1AA1 65 85 2F 65 6D 85 65 AS 5A 1059 EØ 25 BB FØ ØD : A5 10 :85 2011 1AA9 64 85 30 65 60 85 64 70 : BØ 1061 85 65 A9 Ø1 85 64 85 10 00 03 :FF 2019 26 09 86 2F AS. 65 1AB1 1A 4C 26 09 A5 10 05 11 :30 1069 40 25 09 A0 00 B4 64 B4 :BF 2021 20 AA B1 A5 :30 1AB9 F0 03 20 45 18 18 A5 66 : CØ 1071 65 C8 B4 10 4C 26 Ø9 A5 :FB AN AS PB 8505 65 AB 98 1AC1 BE 85 BF A5 61 20 6A BB : 64 1079 ØF FØ Ø3 4C 35 A4 20 61 :69 2031 64 AA 98 65 49 AB BA :52 55 26 09 20 1ACS 60 1A 4C CO : C7 1081 26 ES ØF AS 65 85 24 A5 : GE REGS 2F EØ 4A 07 65 4A A5 FØ 10 25 1AD1 1A A5 FØ 1A 11 38 63 1089 66 85 25 A4 64 84 64 FØ 1091 36 C8 84 2F A6 34 A5 33 : 3F 84 30 85 3E 4C 26 09 85 30 84 2F A0 FF 84 10 CB 2041 · BC 1AD9 AS 65 85 2F AS 6D ES 65 : C4 2049 30 84 2F 2051 B1 2F 85 PF : 50 1AE1 85 65 A5 64 85 30 A5 60 : HA 80 03 CA 86 85 64 C8 B1 2F FD 18 E5 2F 34 : DC 85 1099 1AE9 E5 64 85 64 70 1A 4C 26 1DA1 85 : C4 85 AS FF :47 2F 50 33 85 65 86 66 2059 65 CB B1 1AF1 09 AS 10 05 11 F0 03 20 :91 1DAS 10 33 88 98 91 :93 2061 09 50 CB 21 00 50 50 **B**5 91 40 : 2F 1AF9 18 1A A5 66 45 6E 85 BF EQ: 4C 8A 1F 20 C8 21 1081 88 FØ Ø7 B1 24 91 33 88 :80 2069 CB 21 19 1801 AS 61 20 53 88 4C 26 Ø9 2071 4C 4E 2079 85 11 - 80 1089 DØ F9 B1 24 91 33 45 34 :47 1809 20 6C 1A 4C FD 1A AS ØE 10 85 6C 10C1 C5 SF CB B1 32 FØ B3 46 ØF 60 B4 :FB B1 : ØF 40 26 : 44 1811 25 11 FØ 16 38 A5 65 85 60 60 40 58 B6 38 AS 64 :83 2081 2F 85 60 1819 2F ES 6D 85 65 AS 64 85 -27 2089 DØ Ø3 CB 1001 65 60 BØ F6 AA CA FØ 70 :13 81 2F 1821 30 ES 6C 85 64 70 20 4C 46 1009 85 2F 33 ES 2F :E9 2091 85 69 C8 B1 2F 85 6E 09 : 56 1829 26 09 AS 10 05 11 F0 03 86 1DE1 CB 34 85 PA EE FØ ØE :25 2099 80 85 6A C8 B1 2F 85 6B - 2A 1831 20 18 1A A5 66 45 6E 2F 85 6C C8 81 2F A9 00 85 11 4C 26 85 28 1DES 88 FØ Ø7 B1 6D 91 33 88 :55 20A1 CB B1 - 86 A5 61 20 53 BB A5 1839 65 : 36 20A9 85 6D A9 00 85 1DF1 DØ F9 B1 6D 91 33 18 AS :50 40 26 :45 1841 49 FF 85 66 40 26 09 20 : 40 2081 09 20 C8 21 A0 00 B1 2F : 44 65 33 85 24 A6 34 90 88 86 25 A4 64 F0 0E 1DF9 6C 65 - 5F 1849 5C 1A 4C 36 18 A5 10 25 : 41 2089 85 6C C8 B1 2F : 75 BD CB 1EØ1 Ø1 183 1851 11 FØ 78 A5 6C 8S 25 A4 EA. 1E09 88 FØ 07 81 65 91 24 88 2001 B1 2F 85 6E 40 56 : E4 1859 60 84 24 A9 00 85 69 85 · Ø2 1E11 DØ F9 81 65 91 24 44 2F :18 2009 01 81 39 85 3D 18 A5 39 : F6 1861 62 85 63 85 6A 85 68 85 : 4E AS FF 85 10 91 33 88 2001 69 02 85 39 90 02 E6 AE : A6 1E19 2009 88 81 39 85 3E A5 10 D0 20E1 08 20 18 BC 20 AA B1 A0 1869 45 85 46 A5 65 85 2F A5 1871 64 85 30 45 6C 85 5C A2 : A5 1E21 91 33 84 64 A5 33 85 65 :69 85 : DC -50 1E29 A5 34 85 66 C5 35 DØ Ø3 - 29 7A 1879 10 46 64 66 65 90 19 18 20E9 00 A5 64 91 3D C8 A5 65 : 2E : AØ 1D 4C 26 09 A0 02 1E31 50 : 2F 64 1881 AS 62 65 6D 85 62 A5 63 1E39 86 B9 6C 00 64 4C 26 09 A0 01 :40 99 :E3 20F1 91 30 1889 65 6C 85 A5 6A 55 1E41 96 88 10 F3 40 20F9 39 85 30 18 A5 39 69 1891 85 6A AS 6B 65 46 85 6B :10 1E49 4C D8 1E 20 00 17 A4 65 :90 2101 85 39 90 02 E6 3A 88 B1 : C9 1899 Ø6 6D 26 6C 26 45 26 46 :30 1E51 FØ ØE AS 60 85 24 AS 6E :63 2109 39 85 3E A0 00 A5 10 F0 :53 1E59 85 25 C4 6C 90 02 A4 6C 1E61 20 90 1D A9 FF 85 10 4C 1841 CA DØ DG AS 62 85 65 AS :13 : DB 2111 12 30 4F 98 91 30 A5 64 - BB 1849 63 85 64 45 50 2119 CB 91 3D CB A5 65 91 3D 30 18 A5 : 4F :11 :84 1881 68 CS 00 12 AS 68 FØ 1E69 26 09 20 DD 17 A4 65 FØ BA : C8 2121 4C 26 09 A5 70 84 70 : 3F :02 10 1889 Ø4 C9 FF DØ ØA A5 69 DØ :FA 1E71 64 38 AS 6C FØ SF E5 65 :38 2129 03 20 18 80 50 BS ØE DØ :5A 1E79 90 18 65 1BC1 Ø3 4C 03 40 89 1C BF DB 60 85 2131 08 20 AA B1 A0 00 :1E 4C 18 1809 69 FØ 1A 40 82 10 A5 10 1E81 6E 90 01 EB 86 25 20 90 :80 2139 91 30 00 EA: : B4 21 A0 00 A5 61 CB 18D1 Ø5 11 FØ Ø3 20 18 1A A5 E1 1E89 1D A9 FF 85 10 4C 26 09 :72 2141 04 85 65 FØ D3 A5 62 :28 AS 10 F0 0D 20 D2 0B 20 86 1D A9 FF 85 10 4C 26 1809 66 45 6E 85 6F AS 61 20 SE : : 06 1E91 2149 A6 66 30 02 29 7F 91 30 :FB 25 09 A5 25 A4 1E99 18E1 28 BA 4C 30 CB AS :29 :80 2151 C8 A5 63 91 64 53 10 20 BF 1A 40 78 1EA1 09 20 00 80 AØ 84 10 LAA 65 91 3D 4C : 89 2159 91 3D CB A5 26 09 1BF1 DA 1B 20 2A 1A AS 10 FØ 1EAS CB 84 65 CB B9 00 01 :EB 2161 :58 AO 2169 90 18F9 14 DØ 06 A5 10 25 FØ 1EB1 FA 84 64 A9 01 85 66 : 6F 81 30 85 ØC 20 88 18 85 64 84 65 20 91 1EØ1 83 -68 1E89 86 1D 4C 26 09 20 DD 17 : A4 2171 2F 88 81 3D A8 91 2F A9 : F5 1009 20 DB 10 C6 10 A5 66 45 1EC1 A5 65 8D 00 01 A0 FF FF - ØB : 46 84 - B4 2179 C8 91 SE. A5 66 C5 32 6F A5 61 6E 85 20 12 88 1ECS : D7 :64 10 08 84 24 08 84 25 20 2181 90 19 A4 64 C8 B1 65 C9 +B7 1019 40 26 09 A5 10 05 11 FØ : C4 90 10 1ED1 4C 26 09 A0 00 B4 2189 FF FØ Ø3 20 .23 86 1D A4 64 : DB 2191 A5 3D 91 65 C8 A5 3E 91 2199 65 A5 66 A0 02 91 3D 88 18 10 : C4 1ED9 64 84 66 88 84 10 40 26 : CE : F6 1029 10 25 FØ 68 A4 60 78 29 A4 : F4 84 1EE1 60 FØ FØ 54 1031 25 A5 BD 85 24 AG 65 86 85 1EES AD 01 84 60 A5 ØD 21A1 AS 65 91 30 88 AS 64 91 80 1039 3F AS 64 85 40 DO 70 BA :81 1EF1 50 AB 11 A4 50 A5 60 DØ : 98 21A9 30 40 26 09 A0 Ø1 B1 39 DB 1C41 FØ 2D EØ Ø1 FØ 1E 1EF9 6E 38 AS 64 FØ D7 ES 6D 1FØ1 90 D3 69 ØØ C5 60 80 Ø1 98 FØ AE: ES 60 BA 2181 85 49 C8 B1 39 85 18 : E4 1C49 03 C8 D0 63 A5 6D FØ : CE 14 : 62 2189 A5 39 69 03 85 39 90 02 ; 05 1C51 C9 01 F0 10 CA C9 02 D0 1F09 A8 AS ED F0 SA CA BA :51 :07 21C1 E6 3A 4C SC 09 AØ 01

2109 39 85 18 A5 39 69 7E 2481 PF. 85 2F BØ 03 : 09 2739 B1 4E 91 SF 4E BC CB B1 91 60 2101 85 90 39 02 EB AE 88 **B1** 99 2489 A5 30 69 28 85 30 EØ 2741 :11 88 B1 25 AA 20 88 2109 39 85 60 0E 86 SC AS 10 -F4 94 FØ EØ FE FO 41 AB 2749 20 21E1 00 AA B1 E5 10 38 ·CB 29 11 2F FB 85 FØ : 40 2751 BA AB 88 58 03 85 24 A6 4A : 31 24A1 10 04 B1 2759 85 SE 4E FB AØ 59 21F1 AØ 80 01 CA 85 02 B1 :27 BAPS AØ. 03 81 85 60 88 B1 84 2751 22 88 00 FB AS 4E :E3 21F9 24 99 50 00 88 10 : 56 85 BC 24B1 2F 40 09 88 B1 91 2769 E4 34 90 18 DØ 06 33 D3 1055 00 85 2F 85 30 AØ 46 10 :FB 2489 PF 85 BE 88 B1 85 2771 50 : F5 FØ 12 90 10 20 A6 27 AØ 09 5503 64 66 65 90 ØD 18 A5 73 2F 2401 BB B1 2F 85 60 88 2779 01 : E6 81 4E C9 FF FØ EA 20 F9 2211 65 50 85 2F 95 30 65 51 : 04 2409 85 6B 88 81 2F 85 5A 2781 27 30 B2 4C 90 27 AØ : 20 2219 85 30 06 50 56 51 88 DØ : 28 24D1 Bl 3E 85 69 4C 25 09 AS 09 2789 00 B1 25 AA 50 27 BC 85 :39 DØ 11 03 20 48 11 27 2409 50 AS 30 85 51 80 DA 2791 35 84 36 50 4C BS 5553 A5 ED 85 65 A5 : 05 24E1 05 08 50 58 2799 27A1 FØ AS AS 05 27 A5 35 A4 85 36 33 :61 1655 OF 55 SC 85 64 DE 24E9 10 91 50 FØ 10 30 56 AØ :94 84 34 60 EA 02 20 27 BC 76 2239 50 00 13 AS 52 FØ 07 3Ø EØ 24F1 03 AS 55 91 50 BB 64 13 27A9 02 AS. EB 49 FF 38 55 4E A4 E4 2241 ØA 40 1F A2 4C 3E 84 DB 2459 91 98 E0 50 40 85 26 70 2781 : EE 4F BØ Ø1 88 85 HE 84 4F EØ 4A 40 10 20 AS 52 10 2501 70 04 38 10 BC 20 12 2789 50 48 38 65 5F A4 60 2251 FØ F2 F5 95 36 3Ø 44 4C E2 : BE 2509 82 ØE DØ A9 01 AØ 05 : 60 2701 80 01 88 85 SF 84 60 B1 50 2259 1F 10 27 EB Ø3 64 00 : 63 2511 91 50 EØ Ød 20 18 BC :23 20 2709 80 01 B1 4E 99 88 : BE 2261 00 01 00 00 20 F4 19 AC : C9 2519 AA 4C B1 F2 24 AD 05 : BF 2701 10 FB 50 05 09 86 00 01 5568 55 08 AE 23 84 39 ØB 86 AA 2521 66 91 50 88 A5 65 91 2709 : C6 PO EQ ØP. 05 09 D7 00 01 3F 2271 Ø8 85 DA AE 24 31 AE 25 :39 2529 88 A5 64 91 50 BB A5 53 : C5 27E1 50 EØ 04 Ø9 E7 2279 05 00 01 A7 ØB EB 86 32 AD 10 ØB BS :13 2531 50 88 AS 62 91 50 88 :40 03 27E9 02 04 05 09 00 01 FD 2281 10 08 85 42 AD 66 188 2539 AS 61 50 91 40 26 09 AS :59 27F1 92 03 05 04 ØA ØF 00 01 AD 5583 25 DØ Ø2 20 A3 22 20 E7 : EF 2541 10 DØ AC FØ CD AØ :19 04 B1 27F9 92 03 04 05 00 ØA EØ EF P291 A2 FB. SA A9 00 ØB : 68 2549 50 C5 32 90 12 85 25 88 + B3 2801 58 00 00 01 96 55 2299 BS OF 80 66 55 40 09 26 : 3E 2551 81 50 85 24 88 81 50 7C 7F 00 01 00 00 AB FF Ø1 : FE 2809 96 00 03 F1 09 1A55 AS 00 8D C4 22 A9 28 BD 20 2559 91 24 AS FF CB 91 : 94 2811 96 00 OF BS **EASS** 85 34 08 85 A5 41 CS 25 AS 38 85 37 : 80 2561 56 C5 32 90 20 A4 54 2819 01 96 00 05 01 96 00 AD 35 22B1 33 10 AE : 8F C9 2569 B1 65 FF 20 FØ 03 86 : 00 1585 Ø3 F1 08 00 00 01 96 00 42 GE: 2289 86 AS. 00 AØ 00 : 20 2571 10 A4 64 AS. 50 18 Ø2 84 2829 06 FF 96 00 01 : 28 5501 99 50 2A CB C0 06 FB :28 2579 AB 51 90 01 EB 91 ES CB 165 2831 96 00 03 F1 07 00 00 01 BE 5563 DØ 18 AD C4 55 85 PF 2581 BA 91 65 A5 66 90 04 91 :51 2839 96 00 03 F1 53 00 01 00 52 1052 05 22 85 30 B1 2F C9 05 :SE 2589 50 88 A5 65 91 50 88 AS :00 2841 96 00 00 28 E7 61 00 FF 37 22D9 FØ 95 FØ E6 C9 20 BØ EØ · D3 2591 64 91 50 4C 28 09 AD 92 2849 96 00 ØF F1 01 96 00 ØB 60 22E1 AS. 01 D0 DC A9 28 CD CS : 6B 2599 84 10 88 AS 90 85 55 99 2851 FF 00 C4 96 ØB Fi FF 96 GE **22E9** 22 AD 22 69 07 80 C4 : BA 25A1 01 88 84 64 4C 25 09 AD 6C 2859 03 F1 Ø9 00 00 01 96 03 EE : 00 22F1 90 C5 22 : 34 : BC CS EC 25A9 01 84 11 88 A5 90 BS ED :AB 2861 00 Ø6 01 95 00 06 E3 22F9 55 DQ CI AD C4 41 25 C5 25B1 10 01 88 84 6C 50 4C : AØ 2869 01 95 00 00 06 00 29 4E 2301 BA AC 50 08 21 90 AE 08 :EB 2589 86 2F EØ ØC FØ EØ 2871 FF 96 00 06 01 96 00 88 2309 AD 1E 08 8D 1A 23 AD 1F : 44 2501 20 2878 00 19 2881 03 F1 18 84 AF A5 63 DØ 19 : 65 1F 00 00 01 96 00 27 2311 ØB. BD 18 53 EA 00 BD 2509 64 A5 AØ 01 BE 15 AG 25 41 18 00 00 01 96 00 D3 DØ Ø3 EE 2319 40 EE 1A 23 18 : BA 2501 ØC 05 EØ DØ 84 4C 10 25 84 2889 05 01 96 00 06 7E E7 F1 23 EC 18 23 00 2321 FØ CC 14 OC 2509 09 84 20 48 1A 40 26 EE 2891 96 00 00 27 D7 7F 2329 DØ EB AD 85 2F 50 Ø8 : 4B 25E1 09 AZ AØ 98 20 4F BC : ØB AØ 2899 96 00 00 27 BD 61 00 89 2331 AD 21 四日 85 30 AØ 04 B1 : 9F 25E3 00 FØ E3 86 5C EØ 10 : 85 96 00 F1 FF 06 2801 05 F1 01 96 00 CS 2339 PF 85 25 88 B1 2F 85 52 25F1 03 20 4A 19 20 84 AF : 14 28A9 96 00 F1 ØB FF 96 CB 2341 88 B1 2F C9 64 FØ 19 91 AB 25F9 SE 84 25 88 84 71 24 84 :70 2881 00 05 F1 01 96 00 ØB 33 2349 24 88 B1 2F 91 24 88 B1 38 2601 AØ Ø6 84 24 68 SD AØ F1 20 : C4 2888 01 95 00 96 FF 96 90 46 2351 91 2F 24 18 AS 69 05 : 07 BE 10 2609 AØ 06 20 90 AØ FF SE 2801 00 DØ 05 96 00 Ø6 Ø3 90 D9 2359 85 2F E6 30 DØ : 45 DS 2611 AB SC EØ 10 DØ 05 84 10 : 98 5863 01 00 00 01 7F 82 00 49 2361 50 44 A6 4C A4 20 : 14 2619 4C 26 09 84 20 4A 14 11 : 06 2801 00 06 F1 01 00 ØB 01 76 2369 60 A6 4C 74 A4 01 :48 B1 2621 40 56 09 A5 64 C9 06 FØ : 88 2809 00 F1 ØE FF 00 05 F1 01 76 2371 39 85 2F CB B1 39 85 :4E 2629 Ø3 40 48 B2 A5 65 85 22 : AD 28E1 00 00 02 A7 00 00 01 00 89 2379 CB B1 39 91 2F CB B1 39 :CB 2631 AS 55 23 20 **B5** F7 EA 40 CS 28E9 05 F1 01 00 F1 F1 05 2381 91 2F CB B1 01 00 · SE 39 18 65 39 2639 25 09 ØB BD A2 5A 26 95 : ED 28F1 06 F1 01 00 05 22 - AØ 2389 85 39 90 02 E6 3A 40 · 85 20 2641 50 CA DØ F8 86 40 10 26 C5 2859 05 05 00 SA. 2391 09 A0 01 39 85 50 B1 CB : 4B 2649 60 95 05 BD SA 28 95 68 : 94 F1 F1 2901 Ø6 01 00 Ø5 F1 01 BE 2399 B1 39 85 A5 18 69 :00 2651 CA DØ FB 86 11 40 26 129 2909 ØB 01 00 05 F1 FF 00 BØ IAES 02 85 39 90 02 E6 BE : 98 2659 82 C9 ØF DA AI 00 BA BA BC 2911 00 06 F1 00 06 F1 05 F1 01 01 00 CS **EAES** 50 06 B1 AA FØ 14 AØ OP 18 01 40 2661 69 C9 Ø5 88 00 SA BA 32 F1 01 2919 05 2381 CB FF 00 : CØ B1 48 50 B1 50 48 BA : 96 49 2669 FØ 10 3E FØ 29 68 F1 2921 05 01 00 06 F1 01 DE. 00 2389 10 05 CB B1 50 48 BA 48 - 34 07 2671 FØ DØ 48 CB 98 90 EB : 01 05 2929 F1 FF F1 00 05 01 00 : 08 2301 DØ AØ 00 B1 50 48 CB :15 2679 B9 00 01 CB CS 90 32 25 2931 06 00 00 40 88 93 5368 CØ Ø6 DØ FB BA 48 A5 50 : 49 2681 E8 85 01 46 89 00 85 45 :F9 2939 00 FF 00 05 F1 01 00 : 39 2301 48 AS 48 89 01 51 48 90 2689 CB B9 00 01 CB 84 3F AB BF 2941 F1 01 00 06 01 00 2309 EØ 16 90 03 4C E2 24 4C : C4 P891 B1 45 90 EB 07 EB CB 81 : D5 FI Ø1 FF F1 F1 2949 00 05 01 00 06 : 3E 23E1 35 A4 68 68 85 30 58 85 45 C9 EB A4 2699 FF FØ Ø8 90 EB 07 : 92 2951 F1 00 ØB 01 00 05 42 2F **53E8** AØ Ø6 68 91 SE. FØ 13 20 DØ C1 C9 Ø1 26A1 3F CA A4 CB F1 F1 CA F4 2959 01 FF Ø1 FI 00 06 00 0F : 42 23F1 10 05 A0 Ø4 68 91 2F AØ B1 25A9 3F DØ BB DØ :55 F1 01 2961 00 06 00 23F9 03 68 91 2F 88 68 91 06 : 56 2F : C1 2681 F1 82 98 DØ 69 07 18 : 50 2969 00 05 FF 00 ØB 4E 4C 09 : 2A 2401 26 58 88 91 2F DØ 5683 AB 90 AB 85 45 20 ØE 25 44 2971 FF 00 06 05 56 2409 FA 4C 26 09 20 21 : BF 2601 A5 45 FØ 29 5A 00 EB : FB 2979 F1 FF 00 06 Fl FF 00 06 2411 39 48 AS 2A 48 A9 A4 48 07 2609 EB 85 62 AS 01 85 2981 F1 F1 Fi 01 00 25 01 00 ØF 76 2419 AØ. 2F 03 B1 85 39 CB B1 2601 BD 07 EB ER BS EA BD EB :92 01 2989 F1 ØB FF 00 ØD 00 90 2421 2F 85 AE 40 50 09 A0 ØB 09 5609 EB 85 6B AØ 01 B1 EA : 37 FF 2991 48 18 00 00 FF 2429 B1 2F 29 FB 85 FØ 7E 10 16 · D7 26E1 25 CB B1 6A AØ 00 91 LAB 2999 FF F1 FF 00 00 F1 00 FF 02 2431 04 BI 2F 85 : 9E 66 26E9 62 E4 45 DØ 09 50 ;FE 29A1 00 00 00 E3 2439 EØ 0A B1 2F 85 88 B1 : E4 26F1 84 58 AS A4 38 OE **PARES** F1 00 FF 00 BB 2441 35 85 64 4C 26 09 88 26F9 85 4E 85 35 84 50 84 4F : 54 Fl 2981 00 00 00 14 2449 SE. 85 66 88 B1 2F 85 65 :20 2701 7E 36 84 C4 34 90 DØ : 80 F1 F1 2989 00 FF 00 FF 00 FB F1 2451 88 B1 2F 85 64 BB B1 PF . 4E 2709 FØ 76 33 78 90 CS AB SB :C1 FF F1 2459 2901 F1 00 FF 00 03 85 53 88 B1 2F 85 88 05 68 FE 2711 SE EA Ø5 50 BC 27 20 · 55 2909 00 00 00 FF 32 2461 85 51 40 26 Ø9 E6 :51 2719 01 B1 4E C9 FF BS 00 E7 F1 16 FF ØE 62 EØ 00 BE 2469 39 02 EB B1 :49 2721 DØ ØB BB B1 4E 20 AD 27 : 9B 2909 37 E2 00 00 9E 39 85 2471 2F 84 30 0A 25 30 : 06 2729 3A 66 58 DØ D5 20 CB 18 00 FF 99 20 00 00 FE 30 0A 25 30 38 E5 2731 58 10 53 46 58 AØ : DØ 81 07 F1 43 90 D0 20 BB

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EQ

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29F1 00 03 F1 F5 8A CE 43 90 2CA9 41 D2 91 BF 27 93 29F9 D0 21 00 03 F1 F5 BA CE PCR1 90 12 33 29 92 1E 20 AF 2F69 Ø1 ØE DØ EC DB 46 AS C4 93 1F .45 SCBB 4F 45 4C 54 : 35 45 50 10 20 1F 45 2901 D2 2F71 10 MA F1 11 Ø3 F1 : BE 20 C4 60 CC SCC1 41 54 200 B0A5 11 : 43 2F79 54 45 44 52 49 4E 52 20 C5 D2 20 2A 04 F1 90 C5 4E 54 45 52 : AD : 44 2009 ØE 11 2F81 56 45 20 4E 55 40 42 45 :65 CE 20 43 48 45 49 43 45 DS DØ EC 46 :05 DØ 2A19 20 CD C5 SCD1 EC 2F89 20 20 30 90 03 :19 :F3 2A21 24 11 11 10 09 F1 1F CC 2CD9 EC DC 61 46 01 31 01 9C : 09 83 D7 78 46 Ø1 30 30 2F91 18 90 44 20 64 41 54 41 F5 46 F7 PAPP 45 41 SCE1 01 35 01 90 nn Ø2 2F99 46 01 31 1B 9C F7 BD : 38 F5 2A31 ZE ØC F1 SC 31 29 DØ EC : B4 2CE9 F5 46 Ø1 33 Ø1 9C 2CF1 D4 Ø4 D1 74 44 46 F7 8D · DE 2FA1 D4 04 D1 17 47 43 90 C2 :40 2A39 46 23 11 1D 09 F1 1F D3 : AF F1 F5 38 01 93 : A6 EØ ØØ BA EATS CS :22 2841 41 56 45 20 C4 41 54 41 A5: 21 C5 FF Ø3 52 Ø3 79 10 ØA F1 11 03 :69 PCF9 DØ EC 2FB1 46 22 10 35 58 DØ EC 53 20 44 2A49 2E ØC F1 9C + D1 2001 FE 03 94 D4 ØE 46 07 44 : 48 2FB9 F1 49 49 53 4B · 58 57 2A51 46 23 11 10 09 2009 45 40 45 54 45 2FC1 20 49 4E 53 45 : 61 2A59 4E 54 45 52 20 C4 41 54 :04 2D11 06 65 FD 03 E2 08 D2 A6 : 68 erc9 44 20 59 2F 4E D0 EC D2 :70 9C 33 29 1D 09 F1 2A61 41 2E ØB F1 90 62 EE + BF 2019 SE 20 46 44 51 08 52 07 **B3** SED1 E7 43 46 01 4E 01 90 04 BA :E3 2A69 EC 46 23 11 1F 2021 08 88 F5 52 07 08 81 F7 5 F.7 2FD9 04 D1 E8 46 46 2A 1D 1D . 5B 2A71 D3 45 41 52 43 48 20 C4 : D7 11 03 F1 1F 44 4F 20 · F3 BP BF 9F OF 59 :10 PDP9 B3 OF BC D4 SFE1 2E ØA F1 9C 4F :63 2A79 41 54 41 :98 34 03 80 PFE9 55 20 52 45 49 1602 Ø3 9E 6E F5 29 : DB 51 55 2A81 29 DØ EC 46 23 11 10 09 :40 55 02 83 13 88 2FF1 52 45 20 44 49 2039 08 83 : 03 53 48 20 : AB 2A89 F1 C1 4C 54 45 52 50 TAA 1F 2041 8D D4 04 D1 E5 44 D2 2FF9 46 41 43 49 40 49 54 :73 :75 :CE 2A81 C4 41 54 41 2E ØB F1 9C 2A88 35 29 DØ EC 46 23 11 1D : 86 2049 43 DB D2 CE 53 52 19 0A :73 3001 45 53 20 3F 20 59 2F 4E 10 2051 DD DØ 46 06 1C D4 84 3009 D0 EC DS E7 43 46 01 59 :84 CF 114 200 FA 1F C4 45 4C 45 :90 54 2DS9 C1 CC DØ 8A Ø3 82 CF 46 : 30 3011 01 9D D4 15 52 0F F5 52 :58 C4 41 54 41 PE ØA : 39 BAAS 45 20 na 74 4E 2061 Ø1 2F DØ 34 CF 8A 62 52 84 3019 ØB F5 52 OF AF +2F 36 29 DØ EC 93 D4 Ø4 D1 E8 46 F1 9C 46 23 89 3021 10 2069 ØE EA 46 Ø1 90 DØ 28 CF : 69 50 9E 1F DØ 52 49 3029 46 01 2AB9 11 10 Ø9 F1 :E3 2071 CS CE CS 51 90 45 07 CC D3 20 : BS ØC П4 :FD 2AC1 4E 54 20 C4 41 54 41 2E - 94 29 CF 3031 00 60 Di E8 46 47 93 2079 1F DØ 45 ØA :10 45 2AC9 ØB F1 9C 37 29 DØ EC 46 2AD1 23 11 1D Ø9 F1 1F C5 4E 3039 1E 11 04 3041 45 52 20 04 F1 1D 45 4E 54 20 4E 41 4D 45 20 : 86 2081 C1 D2 C1 C3 D4 C5 D2 D3 :4C : 39 7C 9E 64 46 00 FF :30 7D D2 F9 54 46 01 :6A : DZ : B7 3089 DØ SE 47 46 49 40 : B3 2AD9 44 20 50 52 4F 52 ØF 3048 4F 46 20 41 45 50 2091 04 28 40 2E ØA F1 9C 38 29 DØ 52 05 05 94 3051 :66 9D F5 : 52 54 4F 20 42 45 20 53 41 :10 2099 88 06 SAES EC 46 1F 11 10 09 F1 1C 3F 2DA1 BD D4 Ø5 D2 26 51 DB :36 3059 56 45 44 PF 4C 4F 41 94 : FD 2AF1 C5 4E 54 45 52 20 43 48 : DØ 2DA9 46 01 88 06 90 04 02 08 3061 45 44 20 03 F1 4F 52 20 :66 PAFS 4F 49 43 45 2E 07 F1 1F 55 2DB1 45 45 01 59 : 33 3069 27 51 27 20 54 4F 20 52 -14 DE EØ 01 90 : 09 3071 45 54 55 52 4E 20 54 4F 3079 20 4D 45 4E 55 D0 EC 46 2801 DØ B3 D7 FF Ø1 FD Ø1 CS : AE 2D89 D4 04 D1 A1 45 52 19 0A :CF 2809 65 43 94 AB EF 10 00 00 : 5A 55 DØ EC 46 : 66 SDC1 DD DØ 37 DØ S2 19 0A DD :80 2811 05 94 04 07 02 23 64 01 :05 3081 02 11 1D DØ B3 D7 45 2DC9 DØ 46 Ø6 1C D4 CF :78 D4 C1 2819 ØF 41 BA Ø5 BC FS 52 08 :53 CC DØ BA Ø3 82 CF 3089 01 51 11 9D D4 Ø4 D1 E8 : 09 2001 BA 62 F7 BF : ØE 3091 46 52 ØE DO 8A Ø5 CD 2821 Ø5 BB D4 1A 46 01 2009 52 ØE EA 46 01 90 D0 28 :71 11 2829 91 DØ 52 1C EA 46 Ø6 2Ø :1F CF 46 07 CC C9 CE C5 D3 : 3C 3099 94 D4 04 D1 FE 49 8A 15 : 3E 2DE1 :21 2831 05 F1 D0 EC 46 02 91 91 SDES 20 1F DØ 29 CF 45 ØA :67 30A1 93 D4 04 D1 9A 4B 46 0B +1F 30A9 11 1D 12 53 41 56 49 4E 30B1 47 92 20 D0 31 D0 EC 40 :20 2839 DØ D1 GE 42 8A Ø5 93 F5 2DF1 C8 C1 D2 C1 C3 D4 C5 D2 : GE 2841 52 03 05 93 F7 8D D4 04 :00 : 04 2DF9 D3 DØ 8A FE Ø8 94 D4 Ø7 - A5 2849 D1 F3 42 29 08 83 55 64 3089 BE 02 F5 8A CE BA :16 2E01 9E FF 2E09 2A FF ØB D1 EB 44 F2 54 :56 : ØB 3001 07 CE 80 06 FF ØD 40 90 2851 82 13 8C F5 34 Ø3 88 S1 28 CB : A7 :84 Ø9 D2 26 04 07 DB FC 43 D1 ØF :99 3009 01 FE 00 82 80 08 80 D4 :20 2859 BF 2E11 BA CD 00 28 FC 51 2A 20 2861 41 52 08 05 93 04 04 01 : EC 2E19 A6 45 00 F8 DS D2 98 53 :FF 3001 04 D1 7F 48 52 02 F5 80 + BC 30D9 F5 52 02 F5 31 BØ D1 78 : 07 2869 78 43 46 23 93 10 09 F1 :18 2E21 46 01 59 01 90 F5 HA FE : FC 30E1 49 46 46 11 1D 44 4F 20 :10 2871 11 Ø5 F1 C1 D2 C5 20 D9 :02 2E29 0A 94 F7 8D D4 09 8A 62 + A3 2879 CF DS 20 D3 D5 D2 C5 20 :15 2E31 9E 64 9E FF : AØ 30E9 59 4F 55 20 57 41 4E 54 :59 0A DB 46 01 5881 58 DB St CE 58 50 3t : E5 2E39 59 01 9D D4 08 8A 62 9E 30F1 20 54 4F EP 05 45 41 +4B DØ : BC 30F9 54 45 20 41 E7 43 FF ØB 20 4E 45 :49 45 01 4E Ø1 :67 2E41 64 D1 CE 44 DB 9E : E5 2889 EC D2 2891 9D D4 Ø4 D1 ØF 41 46 :10 2E49 19 ØA DD DØ 46 :23 3101 20 46 49 40 45 20 4F 52 89 1D 04 F1 C4 4F SS 20 S7 41 4E 20 : AB 2E51 08 F1 90 09 53 20 04 48 :79 3109 20 05 F1 4F 56 45 52 20 CB 2899 11 11 28A1 59 4F 55 20 54 :11 2E59 49 53 20 C3 4F 52 52 45 : 50 3111 57 52 49 54 45 20 41 4E 86 2889 20 54 4F 20 52 55 4E 20 2881 41 47 41 49 4E 20 28 D9 3119 20 4F 4C 44 20 4F 4E 45 2E61 43 54 20 28 D9 2F CE 29 - BC : BE . 97 2E69 20 3F 20 07 F1 3121 3F 20 28 4E 2F :80 DØ DZ E7 :00 4F 29 00 : B3 2889 2F CE 29 20 3F DØ EC Da :90 2E71 43 46 Ø1 4E Ø1 BB :19 3129 DC 51 46 01 4F 01 90 FF SBC1 E7 43 46 Ø1 59 01 90 04 : B1 2E79 BA ØB DB 46 Ø1 ØD FF : 2F 3131 46 01 4E Ø1 9C F7 8D D4 : B7 93 28C9 0D C9 BA FF Ø2 46 01 : 4E 2681 08 46 01 93 00 46 Ø1 BE -91 3139 04 D1 E3 48 45 Ø3 10 72 - 5R 28D1 DØ EC D1 F8 40 43 90 FC :50 2E89 DØ 46 2C 1E 1D Ø4 F1 11 ·AB 3141 90 D0 21 D0 46 02 92 9C 2809 E2 00 03 F1 E8 46 01 93 :52 2E91 08 E1 41 52 45 20 59 4F :85 52 ØF F5 52 08 F5 : B7 3149 DØ EC DØ 9E FF Ø3 52 Ø4 Ø5 94 : 60 2E89 55 20 55 53 49 4E 47 20 : AA 3151 52 ØF AF D2 E5 4B 9E 10 PRE1 :22 28E9 D4 ØB 46 Ø7 D6 C9 3159 93 D4 Ø4 D1 CS D7 : BF 2EA1 54 41 50 45 20 4F 52 20 :38 EB 46 45 01 :01 28F1 CS C4 20 7E 52 05 05 94 2EA9 44 49 53 4B 3F 20 3161 4F 01 90 D14 1E 28F9 D4 0C 46 08 C1 CD C5 CE :30 44 DØ EC DC FF ØC 46 ØØ :F5 3169 52 00 F5 S2 02 F5 4F : 88 2EB1 31 7E 52 Ø6 Ø5 3171 03 40 2001 C4 C5 C4 20 : CE FE ØC 90 D4 Ø4 Di 5D 46 : AA 30 3A 91 4F 06 2E B4 SEB3 2009 94 D4 0C 46 08 C4 C5 CC 2011 C5 D4 C5 C4 20 7E 52 03 2EC1 46 01 44 FE 0C 9D D4 07 2EC9 52 08 75 D1 17 47 46 01 3179 40 20 E0: - 80 53 2C 57 92 80 D1 :30 :06 + DC 3181 56 49 52 02 FS 52 Ø8 F5 · FB 2C19 05 94 D4 10 28 CB 8A CD : 89 2ED1 54 FE ØC 9C D4 Ø4 D1 5D :BF 3189 52 02 F5 31 4F 02 30 AE +38 SC 2021 00 28 FC 51 2A 20 A5 46 : F'4 2ED9 46 8A 75 46 20 93 10 11 : 40 3191 91 4F Ø6 2E 40 53 20 : 82 53 49 57 2029 00 FB DS 25 E2 10 : B3 BØ D2 DZ 20 SEE1 1E 50 4F :83 3199 92 2031 46 20 46 89 44 44 51 44 2039 51 44 51 A6 5E 8A FE 07 : AF 20 54 41 50 45 20 43 :90 31A1 93 D4 Ø4 D1 E8 46 4Ø BE 07 SEE3 - DB BEF1 4F 52 52 45 43 54 4C 59 :10 31A9 02 F5 BA CE 45 ØB 11 10 : 69 12 53 41 56 49 4E 47 2041 94 D4 07 9E FF 07 D2 FC CC 2EF9 2C 20 54 48 45 4E 20 12 :10 .45 31B1 92 DØ 45 01 2049 43 D1 ØF 41 DC 61 : E2 2FØ1 52 45 54 55 52 4E 92 -00 3189 20 D0 31 52 02 ES :09 EC 9C FS 59 01 46 Ø1 4E 01 2F09 2D D0 EC 46 1F 10 40 : BD 31C1 23 CF FD ØB DØ 28 : 35 : E1 2C59 9C F7 8D D4 Ø4 D1 31C9 ØB DØ 29 CF E7 43 : 30 2F11 54 4F 52 20 57 49 40 40 55 FD ØB DØ 34 : AD 2061 08 46 Ø1 93 DØ EC : 29 2F19 2Ø 53 54 4F 50 20 41 55 : DS 31D1 CF EC E9 8A Ø3 81 CB EC 2069 0A DD DØ 45 0E 12 CD 45 29 2F21 54 4F 4D 41 54 49 43 41 :34 3109 CD 00 28 28 CB 8A CD 38 :48 B3 D7 61 2071 4D 4F 52 59 92 20 12 CG FD 2F29 40 40 59 3A DØ 24 31E1 28 FC 90 2A 20 07 A1 75 :50 2079 SS 4C 4C BØ EC 46 14 11 : DD 2F31 52 CØ F5 52 Ø7 CE 8A F5 BE 31E9 46 00 16 9D D4 05 46 01 :18 29 92 20 54 2081 90 12 31 1E 79 76 52 02 E5 36 D0 EC E7 2F39 52 27 EF DI ED 47 40 BF 81 31F1 40 :50 2089 20 00 52 49 4E 54 20 31F9 E9 52 08 15 94 D4 0C Da : B1 2F41 02 F5 9E CE 43 90 D0 20 90 2091 CF 55 54 DØ EC 46 14 : 99 FS BA CE 11 2F49 00 03 F1 52 Ø5 : 09 3201 E5 48 SE 10 93 D4 04 D1 :10 2099 90 12 32 29 92 1E 20 54 94 3209 E8 46 52 C5 C2 F5 29 CE 45 01 93 DØ 55 : BA 2F51 2CA1 4F 20 D3 41 56 45 20 C4 : FB 2F59 9E 03 8C D4 03 9E 63 8A BB 3211 D4 Ø4 D1 DE 49 31 6D 52 : F5

3219 02 BF 3401 52 5E 45 4E 41 40 DB 3781 51 90 80 04 C4 1856 D1 E8 46 AC 28 38 : 4F 3409 EC 52 10 18 DD DØ 4F 45 ØA B7 3789 45 01 51 90 :18 9229 00 52 ØB 15 94 D4 ØC DB : F8 11 53 1E 43 52 41 54 42 3791 05 46 3231 4B SE 10 93 D4 04 D1 : 40 34E9 · AD 3799 90 DD 3839 B1 52 ØF B1 34F1 DØ 1E 54 BF 37A1 90 46 01 49 00 114 24 98 3241 114 : BB 34F9 4B 45 52 DØ EC 52 10 18 : 00 37A9 DA 4F 52 ØA FA 46 15 97 3249 40 BE 02 F5 CE BA 46 :86 3501 DD D0 45 07 37B1 A1 49 4E 49 54 90 49 41 78 90 3251 1.0 11 12 40 3509 55 52 10 49 54 DØ EC 18 37 3789 49 SA 49 4E 47 20 FB 3259 49 4E 47 92 50 D0 31 DØ : B1 3511 DD DØ 46 ØB 11 1F 43 5F 49 53 48 1E DØ EC ØA SE 3261 EC 52 02 F5 BA F5 SE F5 34 3519 4F 4E 54 49 4E 55 45 DØ MA 3709 EA 46 ØC 50 ES. 3269 31 BØ D1 79 52 OF 40 F5 : BF 3521 EC 52 10 18 DD DØ 46 ØB BF 3701 53 45 20 30 52 Ø8 F5 ØF AF 20 E5 : 44 3529 10 11 45 3709 EC 37E1 EC 3A CB 52 ØF E5 46 01 49 De ØE 3279 4B SE 93 D1 EB : AE 3531 DØ EC 52 10 18 DD DØ 46 C4 E5 48 D1 74 E9 D2 9F 10 93 DB 3281 46 52 Ø2 F5 52 Ø8 F5 51 3539 ØB 11 1F 52 SC 53 2C 4F 37E9 D4 02 DB D1 4E 45 21 96 3289 Ø2 4F 31 02 30 AE 91 88 3541 50 43 DØ EC DC SC 51 20 BA. 56 90 D4 04 01 AB 19 50 : 37 : C7 3291 4F 06 2E 53 20 4C 20 52 46 01 52 ØC 9C F5 46 01 :72 37F9 52 ØA. EA 43 BØ D2 E5 48 SE 93 10 90 80 3551 53 FS 46 41 4C 47 92 01 DC 3801 56 49 44 41 49 : 4E 54 32A1 E8 46 40 BE 02 : AF 3559 4F OC 90 F7 80 F5 01 46 EØ 3809 4F 92 81 00 EC 52 ØA CH 3248 F5 BA CE 46 00 10 29 F7 BD 3561 51 00 90 FS. 46 01 EA 11 57 3811 EA 46 ØC 50 40 45 41 : 31 3281 90 4C 4F 41 44 49 39 3569 43 ØC 9C F7 8D D4 04 46 01 43 0C 9D DI 3819 53 : 00 45 20 41 49 54 · 78 DØ 3289 92 20 D0 31 D0 EC 52 02 : A4 3571 01 40 F5 6B 158E EC 52 ØF E5 46 01 56 DØ : AF 32C1 E6 B3 D6 FF 1F D6 68 D6 B1 3579 51 46 01 9D F7 BF ØC 114 :47 3829 EC ES DI CE 4F 46 00 60 : 28 32C9 69 D6 74 E9 43 90 C0 10 : AC 3501 ØF 05 52 81 DB 46 Ø1 4F : 75 3831 52 0A 45 11 11 90 45 85 00 03 F1 3201 FS 29 CE 43 90 73 79 3589 90 04 04 D1 74 4E 46 3839 4E 54 45 52 20 44 49 53 : 14 3209 CO 00 03 F1 05 FS 52 05 · BD 3591 Ø1 52 ØC 90 : 64 D4 D1 35 3841 48 20 46 41 40 45 DØ EB 05 83 09 82 8B 55 CE : D5 3599 HE 46 00 60 52 03 F5 55 3849 52 ØA EA 46 Ø1 :37 11 DØ B3 73 32E9 SE 52 09 SE 52 07 : CE 35A1 CE 52 DG F5 SE CE EC FB 3851 D7 6D 46 00 0D 90 04 04 32F1 Ø8 88 F5 52 07 08 81 : C7 35A9 46 18 10 24 F1 45 4E 54 9A 3859 D1 4E 46 00 61 74 52 ØA E7 30 EB 635E B2 BE SE ØE BC 114 83 52 49 47 20 4E 41 35B1 45 52 20 4F 49 : BE EA 46 3861 16 4E 11 81 45 54 41 3301 BE BA FE EØ 9E 1F 81 ED 00 41 3589 4F 4E 40 40 :39 3869 45 52 20 44 49 53 4B 20 :20 **9309** 82 CD 00 28 9E CB 23 BB BF 35C1 DØ EC 46 04 10 04 : E7 3871 49 44 20 4E 55 42 46 3311 34 00 88 D4 OF 52 AB 35C9 DØ B3 D7 6D 46 Ø2 91 91 :20 3879 52 DØ EC 52 ØA EA 45 02 B1 3319 52 BA ØF B1 50 63 : E8 3501 DØ 46 00 0D 9D D4 04 D1 ØD 3881 11 49 46 20 52 45 51 3889 49 52 45 44 90 D0 83 55 80 3321 FF 07 D1 E8 46 29 Ø8 35D9 56 4C 83 52 ØE ØD DD 4F 02 :90 90 D0 B3 D7 A1 3329 13 81 73 29 08 83 55 02 : D7 92 60 35E1 2E 4C 45 00 61 46 : 45 3891 61 52 ØE ØD DD 6D 46 ØØ BE 3331 83 13 BC D4 ØF 52 02 **B1** SA 1D Ø4 F1 35E9 19 45 4E 54 45 : AC 3899 01 90 D4 07 21 4F 01 50 - 4F 3339 52 OF B1 20 63 BA FF 07 87 35F1 45 57 20 4E 20 4E 41 :10 38A1 91 61 52 ØA. EA 45 ØF 3341 D1 E8 46 28 CB BA CD 38 : E1 35F9 40 20 07 DØ 45 EC FD :30 27 YE BAS IC 45 57 49 4E 47 D3 **9349** 00 75 58 08 E6 DC - A4 3601 1A DØ EC 46 03 91 EØ : AB 3881 20 44 49 48 78 3351 E9 46 01 00 :61 FF 19 19 3609 DØ EC 46 04 10 04 3889 52 ØB EA 46 ØB 50 40 49 3359 90 D4 09 FD 19 16 91 :53 3611 B3 D7 61 46 00 01 9D D4 :90 41 3801 53 45 20 57 41 49 54 3361 D1 07 48 46 01 40 16 9D : 3F 3619 04 D1 56 40 SE ØE 01 DO : 00 3809 DØ EC 52 ØF E5 38 4F 01 AE 3369 D4 04 46 00 90 76 FC AS EØ 3621 4F Ø2 SE 40 92 61 46 EQ +4F 3801 4E 91 4F 01 3A 92 ØD 92 AA 3371 07 AB 36 F8 BA 50 15 94 : 85 3629 91 03 F1 DØ FD 10 DØ EC BF 3809 01 92 DØ E9 4F AA 3379 68 04 D1 48 80 05 FF :F9 3631 13 91 03 F1 46 10 04 : 62 38E1 80 08 CS FF ØD 46 14 14 3381 DS 48 9E 10 93 D4 :58 3639 12 52 45 4E 41 40 49 11 12 38E9 04 FI 1E EZ. 43 36 3389 Ø8 8A ØØ 82 63 D1 EB 46 :09 3641 42 92 1F 50 00 20 : B6 DØ 38F1 54 48 49 4E 41 47 92 **PH** 3391 SP 40 FE ØE 94 52 D4 ØE : 62 3649 52 ØF E5 38 4F 01 52 91 : AA 38F9 96 20 DØ SD DØ EC 46 10 F4 3399 Ø2 B1 52 OF B1 BA 00 B2 :EF 4F 3651 01 10 SE AE 92 4F 01 : 39 3901 11 1D 10 FI 50 4C 45 SE 41 1AEE E8 45 9F 63 D1 FE ØE 93 : 79 3659 30 92 18 92 4F 01 BA 82 :09 3909 53 45 57 20 41 DØ : 68 BAEE D4 Ø4 D1 A1 48 52 C5 EB 151 ØD 92 DØ EC E9 ES 3661 SC 48 : C5 3911 EC 52 ØF E5 38 4F 01 53 01 55 33B1 30 94 D4 ØE 52 02 B1 : 51 3669 10 93 SE D4 02 DB D1 : BØ 56 3919 91 4F 01 AE SE 00 SE 4F DØ 3389 B1 69 28 00 BB 111 LAC 3671 40 46 00 6D 52 F5 D3 :28 3921 Ø2 2E 40 92 DØ EC E9 80 AI 28 3301 E8 46 AC 38 AC 85 00 :10 3679 CE 52 D6 F5 2F CE 3929 08 05 F5 52 ØA FE ØD 82 72 3309 15 94 55 ØB 04 ØE :17 3681 46 13 1D Ø4 F1 45 4E 54 68 3931 BC DY Ø4 D1 15 51 55 DB 46 49 40 3301 4B SE 10 93 04 05 50 E3 3689 45 52 20 45 20 01 3939 58 CB FC BA CD 00 58 90 7C EB 46 52 3309 D1 02 B1 52 ØF :79 3691 4E 41 4D 45 DØ EC 46 Ø4 +FD 3941 ES AS 00 AB FC 51 20 48 20 63 D1 E8 46 46 11 33E1 B1 : DC 3699 10 04 D7 00 83 ED 46 - B4 3949 AS FB DS BA **63 85** 29 63 42 41 49 20 44 20 44 - 38 36A1 00 00 90 04 04 D1 56 4C 95 13 81 73 D8 02 D8 8A FF 3951 Ø8 83 73 D8 9E 03 54 20 33F1 48 54 41 54 55 EA: 3648 DS CC 50 01 56 4C 3959 94 04 ØF SE FF 33F9 53 DØ FD ØE CF 46 14 : DD 36B1 93 1E DØ 52 ØB EA 46 18 : 85 3961 79 40 BA 02 F5 9E DE 45 4E 3401 50 52 45 53 53 20 ØF 3689 D5 CØ 23 16 F1 C9 DØ EC 90 20 +E4 3969 11 ØЗ F1 ØA 3409 27 20 54 4F 20 52 45 54 : B6 3601 Ø8 EA 46 1A DD 1F 50 52 : A1 3971 C5 CE 04 DS AØ. D3 : 83 4E DØ EC 3411 55 52 52 OP. B1 :51 36C9 49 4D 41 52 59 20 44 49 :57 3979 CS C1 DS C3 CB AØ C4 CS 60 3419 52 ØF B1 DC 61 46 01 52 : 2B 3601 53 48 20 45 55 4E 43 C1 7C 54 :23 3981 D4 C9 CC 03 DØ 64 3421 01 90 D4 Ø4 D1 D6 4B D1 :93 3609 49 4F 4E 53 1E DD DØ : 09 EC 9E F3 3989 Ø8 85 BE 70 SE 54 50 3429 ØF E6 B3 D6 : 08 70 36E1 52 Ø8 EA 46 18 CA 30 16 3991 46 00 51 BA 05 FE 54 43 3431 07 FF 20 D6 21 :50 Fi 36E9 CB DØ EC 52 ØA EA 3999 PS F2 51 FF 09 BE OF FF FB 3439 22 F9 SE 10 94 114 : FØ 36F1 ØB 11 90 56 1F 41 40 49 : A2 Ø9 C3 FF 39A1 FD 01 24 46 93 EB 3441 45 ØF 10 11 45 52 52 4F BA 41 36F9 44 54 45 DØ EC 52 DA : F4 PARE DØ 52 10 EA 46 ØA 03 FF **2449** 4F 4E 20 20 44 49 53 : CE 3701 EA 46 00 11 90 49 3981 C5 C1 3989 DØ EC 39C1 Ø3 81 1F - AD 4E 50 C3 CB CS EC 45 01 DØ 30 : B2 3709 49 54 49 40 45 DØ :FØ SE 6B EC 9E BF BA BF 3459 CF 46 01 10 00 FD 50 DØ : 88 3711 3719 EC 52 ØA EA 45 05 CB SE CD 00 88 88 F7 3461 45 01 1D DØ FD 21 4E 1F 45 57 DØ EC 52 0A FS BA CD 38 58 FC 90 PA 35 3469 01 10 00 FD 22 CF EC BF 3721 EA 52 46 11 11 52 90 1F 45 CA 3901 20 07 A1 EA: 92 3471 B1 52 OF B1 45 3A 3729 44 41 20 44 49 52 45 43 B5 3909 29 FC 90 PA 20 07 A1 4E 50 3479 10 52 45 53 53 20 27 EB 3731 54 4F 52 59 EC 52 A2 39E1 FD 24 EA F6 FE 18 AA. 26 3481 20 54 4F 50 52 45 :81 **3739** EA 46 07 3E ØE 6F 39E9 Ø9 9D D4 BA 08 B2 68 : B1 3489 54 DØ EC DC 61 58 3741 49 54 DØ EC 52 ØA EA 46 BD 39F1 BA ØF 88 D1 04 52 AC AS 45 01 7A 3491 52 01 90 DI 3749 14 1E 11 50 52 45 53 20 39F9 29 BD AC 28 38 00 61 46 SE 3499 49 40 DB 46 92 93 59 90 3751 20 56 20 35 49 20 4E 52 38 3A01 01 90 53 01 D4 04 111 Al 1APE 43 90 C0 B2 00 EØ F1 F4 EB 3759 4F 20 52 20 51 DØ EC DC 55 EDAE 58 00 89 D1 6A 52 24A9 07 02 4B 9F E5 10 93 04 63 3761 01 SC 46 56 00 9C FS 45 70 3A11 ØA 00 BC D4 46 10 BA 34B1 BA 52 ØF B1 Bi DB 52 DB 41 90 3769 01 49 ØC F7 80 F5 45 : 53 CF BIAL DØ 50 46 03 90 58 50 89 CS **BF** 52 ØE ØF D4 Ø4 BC 05 3771 90 01 BD F5 46 A5 3A21 DØ FC 9C 2A 20 55 21 A1 45 01 13 DØ 52 44 3779 Ø1 52 ØC 9C F7 8D F5 46 : BS 3A29 F5 52 IE F7 DD DØ EC 52 50 34C9 1C 18 DD DØ 46 Ø9 11 EE

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1EAE 96 D4 Ø4 D1 SF 3CE1 20 41 53 20 52 45 51 ØB EA 46 DØ DE PERE 18 81 . PE 3CE9 49 52 45 44 DØ 22 ØE - 02 D3 D0 3CF1 97 DD DØ DB 9E : 87 24 FB 6C 3F 1 AE 3A51 D4 C9 CE D5 C5 DØ 9E 6F 3001 00 01 B9 B5 F7 01 50 01 90 D4 56 3009 60 3F F5 FD 49 00 01 3A59 61 46 ØF 3D11 83 F7 81 FF 3D19 82 F5 FD 1C 3D21 25 CE 8A 1F 3D29 71 3F CE FD :90 04 D1 4D 52 46 02 93 1F 25 52 10 1F OD: 3A61 3A69 DØ EC DC 61 46 00 01 90 CE 3F FS FD : 06 3A71 D4 Ø4 D1 FE 51 9E ØB 94 :ED 82 F5 22 FB :09 EØ 52 :70 FD 06 F5 BA 45 00 FF CE 3A79 D4 04 D1 · 87 11 C5 41 42 10 10 52 20 1E : B6 3031 DC 66 46 00 06 9D FS 45 159 3481 46 16 10 45 40 4E 54 : 04 3039 Ø1 03 06 90 8F D4 : DE BAB9 20 20 3041 3A91 45 3041 5. 3049 F5 9E 19 3051 01 84 06 94 F7 83 FS 90 FS 8A 19 3A99 20 D0 3E DØ B3 D7 FF 10 : 54 46 : DC 10 C5 FF 05 9E FE 05 F5 8A 03 81 FE 05 8B : 53 BAA1 FD EF 94 FE 05 88 81 19 82 79 BA 300 80 BC FE 3061 19 94 13 40 E7 BF F5 46 00 10 : 08 EC 3AB1 C3 D4 3E 3069 52 C9 43 90 DB 3AB9 BF 78 CE 52 04 CE 9E 40 E7 07 FS 3AC1 82 EA 46 ØB 91 20 0B F1 : 69 3071 Ø3 F1 F5 19 7E 3D79 94 D4 Ø8 4Ø 3D81 2Ø CE 46 Ø1 3ACS 91 91 DØ EC D1 72 52 28 3AD1 CB 8A CD ØØ 28 FC 51 2A 3AD9 2Ø A6 FC 9C 2A FD Ø5 ØØ : BA 52 BC 51 2A : 4D 94 05 90 04 : 05 3009 04 01 33 55 BA FE BB 11 : D8 94 F8 D5 D1 31 53 EC 3091 D4 20 52 19 ØA DD DØ 37 : C6 46 - 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F8 8A 04 82 64 52 02 3F99 F5 FC E3 :60 51 2A 22 AS 22 AS 3FA1 :12 BC 3FB1 58 52 02 F5 29 CE :20 19 3FB9 ØA DD DØ 46 58 50 04 ЭF 12 1C CF CF CC C9 CE C5 20 D4 20 CC CF CE C7 92 3FC1 : B6 BECB CE - 05 1E DØ 4C 45 C1 4C 54 45 3FD1 20 07 F1 : 00 53 45 20 3FD9 :00 20 03 F1 D0 FC 51 3FE1 :21 3FE9 F5 22 A5 22 F7 DD FB BA FF 3FF1 88 3FF9 04 81 64 22 1C B2 97 B2 :7B ØA DD DØ 45 Ø2 1F 4001 1D DØ : 5B 2A 22 A5 D0 4009 FC EC D1 +C1 51 57 46 01 10 06 :95 58 90 4011 4019 FC 51 2A 22 A5 C3 04 BC EQ: 4021 F7 83 Ø4 B2 64 46 01 : B8 4029 06 F5 9E Ø4 BB 83 90 : EE 81 64 46 Ø1 91 89 Ø2 88 F7 83 4031 04 81 06 90 : F7 4039 F5 05 81 : 6E 4041 62 46 01 4049 02 8C F7 11 06 9D F5 83 02 82 62 30 : DC :07 D4 Ø3 9E 4051 04 BC 64 : CE 4059 25 AS C3 04 88 D4 Ø5 : ØB 55 4061 AS: C3 64 BA 02 BC 114 : 07 4069 03 8A 62 3D 02 88 D4 03 4071 3D 62 D1 FE 54 46 02 93 : C9 9E ØB 94 D4 Ø4 4079 DØ :04 1E 8A Ø5 94 D4 Ø5 8A :4E 4081 03 65 52 4089 ØB 81 72 02 05 94 :07 4091 05 BA 03 B1 72 52 03 05 :19 72 76 4099 94 D4 13 BA 03 B1 23 :80 40A1 CB 9E CD 00 28 FC 40A9 20 A0 20 FB D5 9E 3F : FØ :02 68 SE CB 9E CD 00 28 52 40B1 6F : 05 35 4089 ØB. 05 94 F5 FC 76 3F :15 94 F7 8D D4 ØC 40C1 00 :54 40C9 0B 82 68 8A 00 82 60 D1 :74 4001 BF 58 20 FF 00 28 CB BA 68 4009 CD 38 28 8A 0F 82 6F 52 40E1 C5 C2 55 3C 34 D4 04 D1 : A5 : 98 40E9 9F 59 52 02 05 93 D4 Ø4 AE 40F1 D1 07 FC 9C 2A FD 00 59 : BD 40F9 07 DØ EC D1 13 59 AI : 37 20 9F FC 9C 2A 07 EC AC 28 38 52 0F 4101 76 3F P.P 4109 A1 DØ : BB ØC 10 EA 46 2A ØA F1 4111 1E : AF 4119 EC BA ØF 82 GF 4121 18 81 Ø8 8C D4 Ø4 D1 9C 4129 59 32 00 88 D4 04 D1 9F :FC 4131 59 52 19 ØA DD DØ 52 Ø2 :1F 4139 E7 46 24 9C DØ 52 45 53 IFE DE CS DY DS DE CE 4141 53 20 : AD 4149 20 54 4F 20 43 4F 4E 54 :68 4151 49 4E 55 45 2C 20 D1 4159 4F 20 51 55 49 54 : 19 4161 9E 6F DC 51 46 01 ØD Ø1 BB 4169 9C F5 46 01 4171 8D D4 04 D1 4179 51 01 9D D4 FS 46 01 51 01 D4 04 D1 71 59 9C : SB 59 46 01 .32 90 04 04 01 C9 59 :33 93 1E DØ 4181 46 Ø2 00 BB 4189 D4 04 Di 9F 59 AC 28 00 :30 4191 52 09 E7 46 18 SC DØ 31 4199 45 53 53 20 D3 D0 C1 03 : 5A 41A1 C5 20 54 4F 20 43 4F 4E 41A9 54 49 4E 55 45 D0 DC 61 : AB : 11 4181 46 01 20 01 9C D4 Ø4 D1 : 04 52 Ø2 F5 29 4189 BD 59 : 46 4101 46 37 93 96 C4 4F 20 09 :DB 41C9 4F 55 20 D7 41 4E 54 20 EZ 4101 DØ 52 49 4E 54 4F 55 54 :08 4E 20 D3 43 52 45 4109 20 4F

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OOPS!

A number of people seem to be having problems with the Remember the Plus/4 article that appeared in the December 1986 issue of Your Commodore.

The main problem seems to be that people are not noticing that there is a change in the address in Fig 6 – The Merge Routine.

The change occurs 19 lines from the bottom of page 82. The line starting E830 is the end of the Merge routine. The line starting EBF8 is the start of the Assembler. When entering this section of code do make sure that you change the addresses with the M command before entering the EBF8 line.

A number of symbols were also missing from the text. These were mainly>signs and\$signs. If your knowledge of machine code isn't good enough to sort out what symbols are missing then a corrected copy of the article is available. If you require a copy of this article then send an A4 stamped addressed envelope to:

Remember the Plus/4 Photocopies Your Commodore 1 Golden Square London W1R 3AB

Caption Competition

Since Brian Clough has entered the computer games industry we thought that it would be apt to print a picture of him, and what better excuse than a caption competition. Here he is receiving a bottle of Bell's whiskey from Mr Jingle himself. Seems to have split some of his shirt already! If you



can think of a witty caption, then send it off to us by Friday 28 February 1987. The best caption will win £5. Send your entry to: Brian Clough Caption Competition, Your Commodore, 1 Golden Square, London W1R 3AB.

Congratulations

There were 25 winners in our Melbourne House spot the difference competition featured in the November issue of *Your Commodore*. Each winner will receive a copy of the Melbourne House C16 Collection.

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Advertisement Copy Control: Laura Champion
Origination: Ebony Typesetting
Design: Argus Design

Your Commodore incorporating Your 64 is a monthly magazine appearing on the first Friday of each month.

Argus Specialist Publications Limited Editorial & Advertisement Office, Your Commodore, No 1 Golden Square, London W1R 3AB. Telephone: 01-437 0626 Telex: 8811896.

Subscription rates upon application to Your Commodore Subscriptions Department, Infonet Ltd, Times House, 179 The Marlowes, Hemel Hempstead, Herts. HP1 1BB.

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Our original Repton game was immediately acclaimed as a refreshingly new concept: a game requiring dexterity to complete its arcade-style elements, and clear logical thinking to solve its strategic puzzles. Repton involves retrieving treasure from cleverly-constructed traps of falling rocks whilst avoiding the fearsome monsters and haunting spirits. "This is an astounding game reaching new heights in BBC arcade adventures," enthused the Micro User magazine.

Last Christmas saw the release of Repton 2, larger and much more challenging than before. Acorn User's Technical Editor Bruce Smith wrote: "Repton 2 is better than anything I've played on the BBC Micro or Electron. Brilliant!"

Now, completely rewritten and improved for the Commodore, Amstrad, BBC Micro and Electron, we proudly present Repton 3. For the first time, a screen-designer is included: try to devise screens that will perplex your friends, then see if you can solve their newly-designed screens. Another innovation is the character-designer which enables you to design your own monsters, rocks, eggs, spirits, diamonds . . . any or all of the game's characters can be redefined as you wish.

Repton 3 is much larger than its predecessors — it has 24 fascinating screens, and players who are skilful enough to complete them all can enter our prize competition described below. All the favourite Repton characters have been retained, together with several new features: a creeping poisonous fungus which grows at an alarming rate; time bombs and time capsules (for puzzles in the 4th dimension); and golden crowns as well-deserved rewards for your endeavours. Can YOU complete Repton 3?

PRIZE COMPETITION

If you complete Repton 3, you can enter our competition. Prizes include over £200 in cash, with T-shirts, mugs, badges and pens for runners-up.

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The screen pictures above show the **BBC** Micro version of Repton 3.





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